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Long-term performance issues of mergers and acquisitions

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LONG-TERM PERFORMANCE ISSUES OF MERGERS & ACQUISITIONS

by

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PREFACE

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ABSTRACT

This dissertation examines the long-term financial operating performance of the combined firm resulting from mergers and acquisitions (M&A) and the factors associated with such performance.

Chapter 1 of this dissertation is a general introduction to the entire dissertation.

Chapter 2 of this dissertation examines the overall effect of M&A on the financial operating performance of the combined firm using cash flow measures of performance. The study also serves as the starting point for chapter 3. The cash flow return on assets is computed for each combined firm for each of the five years, both before and after the year of merger. Using regression analysis, t-tests and the non-parametric Wilcoxon signed rank test, this essay examines the post-merger operating performance of the combined firm in relation to the pre-merger period. This part of the study finds that the post-merger operating performance is, in general, an improvement over that of the pre-merger period.

In Chapter 3 of the dissertation, the association of the relative performance of M&A with a number of factors is examined. These factors are: the type of managerial compensation plans, the type of payment to

targets' shareholders, the type of acquisition, the standardized cumulative abnormal returns on the two days surrounding the announcement of the merger, the percentage of ownership by managers, the difference in the debt ratios of the acquiring firm minus the target firm, the difference in the market to book ratios of the acquiring firm minus the target firm, the ratio of asset sales to total assets during the post-merger period of the combined firm, the overlap between the businesses and the period of acquisition. The related theory and literature are reviewed in detail. The results of this chapter find that the performance of M&A is associated positively with the difference in the market to book ratios of the acquiring firm minus the target firm and is associated negatively with the ratio of asset sales to total assets during the post-merger period of the combined firm, the difference in the debt ratios of the acquiring firm minus the target firm, the period of acquisition, the standardized cumulative abnormal returns on the two days surrounding the announcement of the merger and the percentage of ownership by managers. The findings of this essay would be of interest to managers, investors, academicians, government and the general public.

Chapter 4 summarizes the conclusions of the previous chapters of this dissertation.

TABLE OF CONTENTS

CHAPTER 1

LONG-TERM PERFORMANCE ISSUES OF MERGERS & ACQUISITIONS: GENERAL INTRODUCTION

1.1: INTRODUCTION: The dissertation examines the long-term financial operating performance of the combined firm arising out of mergers and acquisitions and the factors associated with such performance.

The last few years have witnessed large-scale corporate takeovers involving several billions of dollars and this continues to this day. There have been several arguments advanced for and against mergers and no consensus has emerged so far.

The arguments advanced in favor of mergers and acquisitions (M&A) have been mainly based on the theories of synergical gains and the market for corporate control. The free cash-flow hypothesis also lends some support to M & A. The empirical evidence cited in support of M & A comes mainly from short-term oriented event studies using Cumulative Abnormal Market Returns (CARs) for an event window of a few days surrounding the announcement of a takeover. There is a strong consensus among these studies that takeovers increase the combined market value of the firms involved and hence, M & A are beneficial to the economy and society (Jensen & Ruback, 1983; Jarrell Brickley &

Netter, 1988). Some of these studies have even equated such increases in value with synergy (Bradley Desai & Kim, 1988). However, there have been very few attempts to verify such claims over the long term and the few studies that examined the long-term consequences of M&A are, by and large, unable to find much empirical support in favor of M&A, with the exception of Healy Palepu & Ruback (1992), which is discussed later in detail.

The arguments against M & A come from two sources, theoretical research and empirical studies of long-term performance. The theoretical arguments against M & A are based on agency theory and the managerial self-interest hypothesis. The empirical studies which found evidence against M & A include: (1) studies which found no long-term improvement in performance or rather found deterioration instead (Mueller, 1984; Ravenscraft & Scherer, 1989); (2) studies which found decline in stock prices of the acquiring firm over the long-term (Magenheim & Mueller, 1988) and (3) other studies, both merger-related and otherwise, which found evidence in support of managers pursuing activities inconsistent with shareholders wealth maximization (Baumol, 1959; Williamson, 1964; Amihud & Lev, 1981).

The popular press is even more confused about the effect of M&A. The financial press like the Wall Street Journal, is generally supportive of M&A. But others are more critical and skeptical of M&A. Historically M&A has been associated with attempts to limit competition

and gain market power, whether monopolistic or not. This was the rationale behind the formulation of merger guidelines by the Justice Department and Federal Trade Commission as well as anti-trust legislation.

Currently a heated debate is going on in the popular press regarding the effects of mergers between banks, which is expected to gather momentum in the near future because of regulatory changes. A study of mergers of banks with assets of more than $ 100 million by Wall & Srinivasan, researchers of the Federal Reserve Bank of Atlanta quoted by the Christian Science Monitor (April 11, 1992, p.8) found that after four years of mergers "the average merger did not generate cost savings" and the article continues "Several other studies have reached similar conclusions.".

The New York Times (February 17, 1992) quotes Edward Ettin, Deputy Director of Research & Statistics of the Federal Reserve Board as saying "There is not yet a lot of evidence to support the idea that there is much to be gained by mergers. But it is not a settled issue.". A 1990 study by David Humphry of the Federal Reserve Bank of Richmond, quoted by the New York Times (February 17, 1992) finds that "the acquisition of a poorly managed bank by a well-managed bank could produce benefits". A Washington Post article (July 16, 1991) with the headline "Bank's Merger Another Blow to N.Y.'s Economy" documents the impact of layoffs resulting from the merger of Chemical Bank and

Manufacturers Hanover on the economy of New York city. Several articles in the popular press have highlighted the costs imposed by M&A on employees (loss of job), local communities (lowering of services to local customers, economic consequences of layoffs, etc.), Government (loss of tax revenue resulting from increased use of debt) and other constituencies. Benefits of M&A cited by the popular press include synergy, increased efficiency, cost reduction and saving inefficient firms from bankruptcy. In the popular press too, there is no consensus about the long-term impact of M&A.

Thus, the debate for and against M&A continues without any conclusive answers. This study attempts to find an answer to this debate by examining the long-term impact of M&A on the financial and operating performance of the combined firm. In addition, it examines the association between long-term performance and several factors, such as, relatedness of business, type of merger, nature of industry, relative quality of management, time period of merger, type of management compensation, ownership of common shares by managers, etc.

This paper is organized as follows: Part 1.2 examines prior research and the rationale for this study; part 1.3 summarizes the major motivations of this study; and part 1.4 describes the organization of this dissertation.

1.2: PRIOR RESEARCH AND MOTIVATIONS FOR THIS STUDY:

The bulk of the research relating to M&A in accounting and finance consists of short-term event studies using CARs, that rely too heavily on the efficient market hypothesis and finance theory. These studies are summarized in Jensen & Ruback (1983) and Jarrell, Brickley & Netter (1988). Few studies focus on long-term performance issues or use data from the accounting information system of the firm.

The proposed study uses data from both the accounting information system and the stock market. It uses cash flow measures of financial performance that are derived from the accounting information system and are free from many of the deficiencies advanced against net income.

Even among the small number of studies which examine the long-term performance of M&A there is no unanimity and they are not comparable because of the diversity of methodologies, sample related problems and other reasons. The majority of these studies contradict the findings of the short-term market studies. These are briefly examined below:

a) Mueller (1984) using product market share as the criteria of long-term performance, found that firms engaged in M&A under-performed control firms. This study used pre-1973 data, which is dated. Moreover, market share does not reflect all important aspects of performance.

b) Ravenscraft & Scherer (1989), using line-of-business data for the years 1975-77 and three accounting ratios to measure performance, found deterioration in the post-merger performance of the target lines of businesses. This study excluded the impact of M&A on the acquiring firms and the use of only 3 years data makes the findings less robust.

c) Herman & Lowenstein (1988) examined the post-acquisition performance of "hostile tender offers" using return on equity ratios, but the results were inconclusive.

These studies are reviewed in greater detail in the second essay to this dissertation proposal. The most recent study, which also served as the starting point for this proposal, is the one by Healy Palepu & Ruback (1992).

Healy Palepu & Ruback, 1992 (hereinafter called HPR) examined the financial performance of the 50 largest mergers of U.S. firms during 1979-84 using cash-flow measures of return on assets. This study found that the merged firms have significant improvement in the cash-flow return on assets during the post-merger period compared to their pre-merger performance. The study also found that M&A did not have any adverse effect on long-term investment in capital equipment and research & development, and that there is a positive association between post-merger performance and abnormal returns at the announcement of a merger.

The HPR study is a significant improvement over the previous studies. Its use of cash-flow measures of return on assets and its focus on the "combined firm" are distinct improvements over previous studies. It also controls for many of the problems created by the choice of accounting methods, amortization policies, changes in leverage, etc. However, it has some drawbacks and the proposed study is an improvement over HPR in the following respects:

1. The HPR study does not examine the factors associated with post-merger performance in detail. Chapter 3 of this study, which is an extension of chapter 2, does exactly this and this is not attempted by the HPR study or by many other studies. In Chapter 3 of this study, the association of post-merger performance with several factors, such as, relatedness, type of merger, type of industry, debt ratio, manager ownership, management compensation plan, management quality, type of consideration, relative size, timing of merger, rate of acquisition, restructuring and cumulative abnormal returns on announcement of the merger, is examined. These factors are selected after examining empirical research as well as theoretical formulations such as agency theory, the market for corporate control hypothesis, the synergy hypothesis and the free cash-flow hypothesis.

2. Probable size bias: HPR used the <u>largest</u> acquisitions. This could bias the results because large firms are more likely to have the expertise and resources to successfully consummate the merger. The

sizes of the mergers studied in the proposed study would be much less biased towards large firms.

Chapter 2 of the present study uses the same methodology adopted by Healy et al (1992), but it extends the work done by HPR by repeating the analysis with and without the equity revaluations of HPR, by analyzing the data with and without including firms with multiple acquisitions and by carrying out sensitivity analysis. In Chapter 3, the present study extends the work done in Chapter 2, by examining the association between the relative postmerger performance and several variables.

1.3: SUMMARY OF THE MAJOR MOTIVATIONS OF THIS STUDY:

1. The arguments for and against M&A continue without any conclusive answers. The proposed study would be a contribution towards settling this issue.

2. There is a paucity of accounting studies focusing on the longer-term performance and this study attempts to fill this vacuum.

3. The present study attempts to improve on the methodologies used by the previous studies.

4. The proposed study addresses a very relevant issue. U.S. firms are currently facing severe competition and M & A could probably be a

response if it results in healthier firms. The proposed study attempts to shed some light into the phenomena of M&A and hence would be of interest to academicians, managers, investors, government and the general public.

1.4: ORGANIZATION OF THE DISSERTATION:

This dissertation consists of three more chapters or essays (in addition to this chapter) as follows:

Chapter 2: Impact of Mergers on Long-term Operating Performance of the Combined Firm:

This essay examines the overall effect of M&A on the financial operating performance of the combined firm using cash flow measures of performance. The study also serves as the starting point for chapter 3. The cash flow return on assets is computed for each combined firm for each of the five years, both before and after the year of merger. Using regression analysis, t-tests and the non-parametric Wilcoxon signed rank test, this essay examines the post-merger operating performance of the combined firm in relation to the pre-merger period. This part of the study finds that the post-merger operating performance is, in general, an improvement over that of the pre-merger period.

Chapter 3: Determinants of Post-Merger Operating Performance:

In this essay, the association of the relative performance of M&A with a number of factors is examined. These factors are: the type of managerial compensation plans, the type of payment to targets' shareholders, the type of acquisition, the standardized cumulative abnormal returns on the two days surrounding the announcement of the merger, the percentage of ownership by managers, the difference in the debt ratios of the acquiring firm minus the target firm, the difference in the market to book ratios of the acquiring firm minus the target firm, the ratio of asset sales to total assets during the post-merger period of the combined firm, the overlap between the businesses and the period of acquisition. The related theory and literature are reviewed in detail. The results of this chapter find that the performance of M&A is associated positively with the difference in the market to book ratios of the acquiring firm minus the target firm and is associated negatively with the ratio of asset sales to total assets during the post-merger period of the combined firm, the difference in the debt ratios of the acquiring firm minus the target firm, the period of acquisition, the standardized cumulative abnormal returns on the two days surrounding the announcement of the merger and the percentage of ownership by managers. The findings of this essay would be of interest to managers, investors, academicians, government and the general public.

Chapter 4: Conclusions:

This essay summarizes the conclusions of the previous chapters of this dissertation.

CHAPTER 2

IMPACT OF MERGERS ON LONG-TERM OPERATING PERFORMANCE OF THE COMBINED FIRM

2.1: INTRODUCTION:

The last few years have witnessed corporate mergers involving billions of dollars. Jensen & Ruback (1983) summarize the findings of studies that examined the stock market reaction during the few days surrounding the announcement date of takeovers. These short-term oriented studies have been highly supportive of mergers and acquisitions (M&A). However, studies that examined the long-term post-merger performance (Mueller, 1984; Ravenscraft & Scherer, 1989; Healy Palepu & Ruback, 1992) do not find any consensus about the long-term effect of mergers.

This study examines the financial performance of the combined firm resulting from mergers between U.S. firms by comparing their median post-merger performance in terms of cash flow return on assets during a five year period commencing with the year after the merger (years +1 to +5 years) with that of the median pre-merger performance during the corresponding five years commencing from year -1 to -5 years. The methodology used to compute the test-statistics for this study is similar to that of Healy et al (1992), but this study extends their analysis in a number of ways.

A large number of event-studies using market data and short

event-windows of a few days around the announcement date, of which mention was made in the first paragraph, have already examined the short-term impact of mergers on the wealth of shareholders of both the acquiring firms and the target firms and have come to the conclusion that shareholders of the target firms gain considerably and the shareholders of the acquiring firms do not lose (Jensen & Ruback, 1983; Jarrell, Brickly & Netter, 1988; Bradley Desai & Kim, 1988; Dodd, 1989; Seth, 1990). The results of Jensen & Ruback's survey of these short-term event studies, which includes Dodd & Ruback (1977), Bradley (1980), Jarrell & Bradley (1980), Bradley Desai & Kim (1982, 1983), Ruback (1983), Dodd (1980), Asquith (1983), Eckbo (1983), Asquith Bruner & Mullins (1983) and Malatesta (1983), are summarized below:

Method of Acquisition	Number of Studies	Weighted Average Abnormal Returns to: Successful Bidders	Targets
1. Tender Offers (Event Window: Mostly around one month)	7	+3.81%	+29.09%
2. Mergers			
Event Window: 2 days	3	-0.05%	+7.72%
Event Window: 1 month	5	+1.37%	+15.90%
Event Window: From offer announcement to outcome	3	-1.77%	+20.15%

A number of studies have examined the bidding firms' abnormal returns during the announcement of a merger and have provided evidence that methods of payment (Travlos, 1987; Asquith et al, 1987), higher

percentages of managerial stockholding (Lewellen et al, 1985), and existence of long-term performance plans for managers (Tehranian Travlos & Waegelein, 1987) are associated with higher abnormal returns.

Bradley, Desai & Kim (1988) and Anju Seth (1990) find that mergers are synergistic and value-creating. Both studies use the short-term event study methodology. However, there is no consensus about the sources of such synergy and the short-term oriented studies may not be suitable to identify those sources since synergies take time to make their impact on the financial performance.

In sharp contrast to the plethora of short-term event studies, there is a paucity of research that examines the long-term effect of mergers (Mueller, 1984; Ravenscraft & Scherer, 1989; Herman & Lowenstein, 1988; Healy Palepu & Ruback 1992). Moreover, even among the handful of these studies, there is no consensus about the long-term impact of mergers on corporate performance and the results are not comparable due to differences in methodologies, sample data and time periods covered by these studies.

The purpose of this study is to examine the long-term financial performance of mergers over a period of five years, starting from the year after the merger, and compare it to the corresponding pre-merger period, using accounting data. This study uses data for mergers which became effective during the period between 1972 and 1984. Multiple

measures of performance are used so as to compare the results with those of previous studies. The results of this study would be useful to managers, shareholders, academicians, financiers, politicians and the public at large because it would shed more light on whether the expectations at the time of the mergers were realized over the long run.

Part 2.2 of this study reviews the literature relating to long-term post-merger performance, part 2.3 develops the hypotheses to be tested, part 2.4 explains the data, methodology and model used in this study, part 2.5 examines the results, part 2.6 is the discussion and part 2.7 is Summary & Conclusion.

2.2: LITERATURE REVIEW AND CONTRIBUTIONS OF THIS STUDY:

2.2.1: LITERATURE REVIEW:

The handful of studies that examine the long-term performance of mergers are reviewed in this section.

The Magenheim & Mueller (1988) study, using stock price data for acquiring firms, finds significant deterioration in the stock market performance of the acquiring firms, over a 60-month period after merger, which, according to the authors is consistent with Dodd & Ruback (1977) and Malatesta (1983), even though they outperformed the market during the pre-acquisition period. This result is contrary to

the "synergy-value creation" argument advanced by the short-term event studies, if we assume that market values proxy for operating performance. This finding, however, is of only limited concern to this study, since this study is focussing on the financial/operating performance as opposed to market performance.

Mueller (1984), in a study of the change in (product) market share for 209 target and 123 acquiring firms, finds that

> "Companies acquired in a conglomerate merger and companies joining in horizontal mergers are both found to experience substantial losses in market shares relative to control group companies following the mergers..... No support is found for the hypothesis that mergers improve efficiency."

However, this study uses pre-1973 data, which is somewhat dated and market share is not a sufficiently broad enough measure to capture financial performance as a whole. Moreover, corporate divestitures and spin-offs could result in loss of market share as well.

Ravenscraft & Scherer (1989) examine the financial performance of 251 target firms which were acquired during 1968, 1971 and 1974, using the Lines-of-Business data for 1975-77 from the Federal Trade Commission. The study uses regression analysis and three different measures of operating performance: (1) Operating income over end-of-the-year assets, (2) Operating Income over Sales and (3) Cash flow over sales. This study finds (a) that target firms, on average, earned positive

abnormal returns compared to their control group during the pre-merger period; (b) that during the post-merger period, their performance deteriorated in relation to the control group; (c) that mergers between relatively equal-sized firms were relatively more successful; (d) that related acquisitions fared better than unrelated acquisitions; (e) that the use of consolidation/accounting methods, (purchase method v/s pooling of interest method) affected accounting rates of return and (f) that, on the whole, mergers did not generate synergy or improve the performance of the target lines of businesses.

Ravenscraft & Scherer's (1989) study is quite extensive. However, it does not consider the impact of the merger on the acquiring firm or on the combined firm, which could have reaped some benefit. Moreover, problems relating to data availability confined the study to only three years.

Herman & Lowenstein (1988) examine the efficiency effects of "hostile takeovers" and find contradictory results. The post-acquisition Return on Equity ratio (ROE) of firms which were acquired by tender offers during the 1975-78 period were higher compared to their respective pre-acquisition period, whereas for the firms acquired during 1981-83 there was a decline in ROE. They attribute this contradiction in results to a number of possible causes, such as, the fact that the takeover premiums increased over time, that a large

number of inefficiently-managed targets were available for takeover during the seventies and that competition in the market for corporate control increased over time.

Herman & Lowenstein's study examines only tender offers and hence, the conclusions may not be applicable to other forms of mergers. The accounting measures of Return on Equity and Return on Total Capital may be affected by merger-induced factors including the choice of methods of consolidation and changes in capital structure. Moreover, the study does not appear to have controlled for macroeconomic changes affecting the industry, as a whole.

Healy, Palepu & Ruback (1992) examine the financial performance of the 50 largest mergers of U.S. firms during the 1979-84 period, using Cash-flow measures (as opposed to the Net Income measures) of Return on Assets and find that

> "the merged firms have significant improvements in post-merger asset productivity relative to their industries leading to higher operating cash flow returns.....Mergers do not lead to cuts in long-term capital and R & D investments. There is a strong positive relation between post-merger increases in operating cash flows and abnormal stock returns at merger announcements, indicating that expectations of economic improvements underlie the equity revaluations of the merged firms."

The study also finds that

> "Although cash flow performance improves on average, a quarter of the sample firms have negative post-merger cash flow changes."

Healy, Palepu & Ruback (1992) is one of the most comprehensive

and detailed studies ever attempted. It is a significant improvement over previous studies in terms of methodology. Its use of cash flow measures of return on assets is a distinct improvement. It examines the performance of the "combined firm" resulting from the merger, instead of either the acquiring firm or the target line of business, as was the case with some of the earlier studies. It controls for many of the problems created by the choice of accounting method, amortization policies, changes in leverage, etc. However, the sample size of only 50 mergers and the selection of only the largest mergers could have biased the results.

The present study is an extension of the work done by Healy et al (1992). This study uses a larger random sample and uses the methodology adopted by Healy et al (1992). However, this study computes alternate variations of the test-statistic using different assumptions. This study also uses other methodologies, such as, t-tests and non-parametric tests to confirm the results of the regression model used by Healy et al (1992).

The above literature review reveals the following facts:

1. The studies which examine the long-term performance of mergers find no consensus and because of the diversity in their choice of methodology, data and the issues examined, they are difficult to compare.

2. With the sole exception of Healy, Palepu & Ruback (1992), none of these studies has examined the performance of the combined firm resulting from the merger.

3. None of the above studies has controlled for the effect of the takeover premium on the performance measure as well as several other merger induced factors, with the exception of Healy, Palepu & Ruback (1992).

2.2.2: CONTRIBUTIONS OF THE PRESENT STUDY:

The present study extends the previous studies by adopting several of the innovations found in the previous studies, especially the Healy et al (1992) study and tries to remedy their shortcomings. The most important contributions of this study are as follows:

1. This study uses Cash-flow measures of operating performance. This has several advantages (Healy, Palepu & Ruback, 1992), as discussed later in this paper.

2. The proposed study covers a wider time period and includes broader sizes of sample firms compared to Healy et al (1993). Hence, the findings of this study should be more generalizable.

3. The present study takes a broader approach. In addition to the

use of parametric methods such as, regression analysis and t-tests, non-parametric methods, which do not depend upon the assumption of normality of distribution, are also used. These steps should improve the robustness of the findings and make the results more comparable with those of other studies.

4. This study attempts to solve the problems created by the choice of consolidation methods, amortization of goodwill from a merger, changes in leverage caused by the merger, etc. by using cash flow measures of return on assets.

5. There is another important difference between this paper and the previous studies. This paper makes a clear distinction between (1) the performance of the combined firm as an entity and (2) the effect of such performance on the wealth of the shareholders. It focusses on the first issue, i.e. the financial performance of the combined firm as an entity. It, however, examines this issue from several viewpoints. It replicates the study of Healy et al (1992) which excludes the change in equity values of the target and acquiring firms from five days before merger announcement to the effective date of merger from the asset base of the combined firm during the postmerger years for the purpose of computing the return on assets. This would exclude any merger-induced changes in market expectation. Secondly, the present study examines the postmerger performance without excluding such changes in equity

values. This would help find out whether the expectations raised by the merger and reflected in the changes in the equity values during the merger period, were realized or not. This study also uses both the 2-digit as well as the 4-digit SIC classification for controlling for changes in macroeconomic factors.

6. The present study, by analyzing the sample data in alternate ways - both with and without adjusting for the equity revaluations as done by Healy, et al (1992), by using both the 4-digit and 2-digit industry categories for controlling for industry level changes and by subdividing the sample on the basis of relative size of the target - attempts to throw more light into the research problem.

2.3: THEORY AND HYPOTHESIS DEVELOPMENT:

There are several theoretical formulations dealing with the effect of mergers on the performance of the combined firm, the most prominent of which are the following:

1. Synergy (or Efficiency) Theory
2. Market for Corporate Control Theory
3. Free Cash Flow Theory

The literature on these theoretical formulations are briefly reviewed below:

2.3.1. Synergy Theory:

Bradley, Desai & Kim (1988) argue that corporate tender offers create gains from synergy. Anju Seth (1990) finds that "value is created in both related and unrelated acquisitions" and that the possible value-maximizing sources could include increased market power, economies of scale, economies of scope, risk-reduction through co-insurance and financial diversification. Chatterjee (1992) finds that the value in acquisitions "comes not from the conventional notion of 'synergy', but by bringing into light unexplored opportunities within target firms which they have either ignored or were incapable of exploiting". Taking advantage of these opportunities after the merger is likely to result in increased potential for generating cash flows.

2.3.2: Market for Corporate Control Theory:

Henry Manne (1965) hypothesized that a corporate takeover is a mechanism which disciplines inefficient managers by replacing them with more efficient managers who are more committed to the wealth maximization of shareholders. According to this view, the takeover market is one in which several teams of managers compete to gain the right to manage the corporation and competition among these teams of managers ensures that corporations are managed by the most efficient management team. Jensen & Ruback (1983), Jarrell Brickley & Netter (1988) and Dodd (1989) review the scientific evidence in favor of this theory,

using mostly short-term event studies and conclude that target shareholders gain from takeovers and the bidding firm shareholders do not lose. This implies that takeovers and mergers should improve corporate efficiency under the new management, which ought to be reflected in the cash flow performance and asset productivity measures in the post-merger period.

2.3.3: Free Cash Flow Theory:

Jensen (1988) develops the theory of Free Cash Flow which posits that managers have a tendency to invest "free cash flows" (i.e. cash flows in excess of what is required to fund all positive Net Present Value projects) in negative Net Present Value projects, which is contrary to the policy of shareholders' wealth maximization. This problem, according to Jensen, is particularly severe in mature industries, such as, oil & gas, tobacco, etc., which have large cash inflows and limited growth potential. Jensen (1988) argues that corporate acquisitions and the debt-load created in the process, by limiting the managers' freedom to use future cash-flows, reduce the possibility of misuse of free cash flows. The increased fixed interest charges of debt also forces the managers to be more efficient. Thus, according to this theory, the post-merger performance should also improve over that of the pre-merger period.

The above discussion on the theories of synergy, market for

corporate control and free cash flow, leads to the following testable hypothesis, which is stated in null form:

> Hypothesis: That the post-merger operating financial performance of the combined firm, defined as operating cash flow over market value of assets (market value of assets is defined as the market value of common shares plus the book value of debt and preferred shares minus cash and short-term investments), is not different from that of the pre-merger period.

2.4: DATA, METHODOLOGY & MODEL:

2.4.1. DATA:

The data analyzed in this study consist of a sample of public announcements of proposals to acquire a target firm by tender offer or by merger. The sample includes completed transactions for the period 1972-86 and was obtained by searching the Federal Trade Commission's (FTC) Statistical Report on Mergers and Acquisitions (July 1981) and the Wall Street Journal. The former source, containing acquisitions completed in the period 1948-79, was used to identify acquiring firms announcing acquisitions in the period 1972-78. This generated 281 potential sample firms listed on the New York Stock Exchange (NYSE) or on the American Stock Exchange (AMEX) at least twelve months prior to the acquisition's completion date. Eighty seven firms were deleted because they were not referenced in the Wall Street Journal Index. The Wall Street Journal was the source of sample firms for the years 1979-86 and generated 221 potential sample firms listed on the NYSE or the AMEX.

The final sample contained 266 acquisitions. Out of this 172 target firms were listed on Compustat. This represented 172 acquisitions by 138 acquiring firms (or combined firms), since some acquiring firms had multiple acquisitions. Out of this initial sample of 138 combined firms, the following were eliminated:

a) Financial and utility firms were eliminated because their accounting methods are not comparable to the remaining sample firms.

b) Firms which do not have complete financial data for at least 3 years during both the premerger period as well as the postmerger period were eliminated because such incomplete data may not accurately reflect the operating performance of the combined firm.

c) Firms whose industry category does not contain at least 4 firms were excluded because such industry ratios may not be representative of industry performance.

This resulted in a final sample of 86 combined firms. Seventy firms had only a single acquisition and 16 firms had multiple acquisitions.

Financial data for the computation of Operating Cash Flow and Market Value of Assets were obtained from the COMPUSTAT tapes. Data regarding the announcement dates were obtained from the Wall Street

Journal and the changes in equity values between the announcement date to the effective date of the merger were obtained from the CRSP tapes. The date on which the target firm was de-listed from trading in the stock market was treated as the effective date of the merger. In a few cases, where such de-listing dates were not available, the effective merger date published in the Mergers & Acquisitions Journal was used instead.

2.4.2: METHODOLOGY:

The development of the test-statistics for testing hypothesis is described in the following three sections.

2.4.2.1: Cash Flow Measure of Operating Performance:

This study uses operating cash flow (computed similarly to Healy et al, 1992) as the measure of performance to test the hypothesis. Operating Cash Flow is defined as "Sales Revenue minus (Cost of Goods Sold plus Selling, General & Administration Expenses)". The cost of goods sold and selling general & administration expenses do not include depreciation. The cash flow as defined above is before deducting interest expense, taxes and extraordinary losses and before adding extraordinary gains, interest income and non-operating income. This definition of operating cash flow does not include gains/(losses) from divestitures and large-scale sale of assets, which are normally treated as extra-ordinary gains/(losses) and focusses strictly on operating

performance for which, by and large, the management is responsible (if not fully controllable). This cash flow measure has the following advantages over the traditional accounting measures such as, ROE and ROA as well as over the cumulative abnormal returns of the market model:

1. It has theoretical support from finance theory (Fisher's theory of value, Dividend Discount Model, Capital Budgeting theory, etc.) which considers cash flow as the source of value.

2. It is free from distortions caused by accounting and accrual policy choices and more particularly, the choice of consolidation method (purchase vs. pooling of interest), choice of depreciation methods (straight-line, etc.), choice of depreciation /amortization period, asset revaluation (stepping-up the book-values), discretionary accrual choices, write-offs, etc.

3. Since, cash-flow is the most non-discretionary component of reported net income, according to research in accounting, it is associated with market value (Ball & Brown, 1968; Beaver Clark & Wright, 1979; Beaver Lambert & Morse 1980).

2.4.2.2: Choice of Deflators:

The above value (Operating Cash Flows) is deflated by the market value of assets computed as the market value of common shares plus the

book value of debt and preferred shares minus cash and marketable securities. The change in the equity values of both the acquiring and target firms from five days before the merger announcement to the effective date of the merger is computed along similar lines. In this study, however, previous takeover offers from other suitors were not considered as in Healy, et al, 1992, because of two reasons: (1) equity revaluations of targets normally reverse themselves when the bid is not successful and (2) there is no way of distinguishing the effects of other intervening factors and noise from the effect of these earlier bids due to the length of the time period involved [as Healy et al (1992)] who claim that this represents "the capitalized value of any expected postmerger performance improvements" . They also argue that "if merger announcement equity revaluations are included in the asset base, measured cash flow returns will not show any abnormal increase, even though the merger results in an increase in operating cash flows". However, in this study we analyze the data both with and without excluding this equity revaluation from the asset base. The above market value of the total assets represents the opportunity cost of the firm and hence a suitable measure of the value of the firm.

2.4.2.3: Computation of the test-statistics :

The computation of the test-statistic for testing the hypothesis is described, in detail, in the following paragraphs of this section:

1. For each acquiring firm and for each target firm, financial data was extracted from the COMPUSTAT industrial and research tapes, for the period commencing five years before the merger (t = -5) to five years after the merger (t = 5). The merger year (t = 0) is excluded from the analysis. The operating cash flow for each year was computed using the following formula described earlier :

CF(i,t) = Sales Revenue minus (Cost of Sales + Selling General & Administration Expenses excluding depreciation) .. (1)

where CF= Operating Cash Flow before interest, taxes and expenses not involving cash outlay.

i = Each firm in the sample.

t = Each year relative to a merger from t = -5 to t = +5 years, except the merger year t=0.

2. In order to control for the differences in size, purchase and sale of assets, divestitures, etc., the above CF(i,t) from (1), is deflated by the Market Value of Assets, which is computed as follows:

MKTVALU(i,t) = Market value of common shares plus book value of debt and preferred shares less cash and marketable securities, both and without adjustment for changes in equity revaluation (Healy et al, 1992) .. .. (2)

3. For each financial year during the pre-merger period , the above two values for each acquiring firm and its target firm/s are added up,

giving a pro-forma figure, as if the firms were combined from the very beginning. As for the post-acquisition period, the target firms' financial statements are consolidated with those of the bidding firm. This study analyzes data for -5 to -1 years prior to the merger and +1 to +5 years after the merger, the same as Healy et al (1992). In the case of bidding firms with more than one acquisition, the premerger period and postmerger period are counted with respect to the very first and the very last mergers respectively. In such cases, there would be a gap of more than one year between the end of the premerger period and the beginning of the postmerger period. This study analyzes the sample firms with single acquisitions separately from the combined sample.

4. The following ratio of Operating Cash Flow Return on Market Value of Assets for each combined firm is computed for each year from -5 to -1 years and from +1 to +5 years:

$$CFROAMV(i,t) = CF(i,t) / MKTVALU(i,t) \qquad (3)$$

where CFROAMV = Cashflow return on market value of assets

5. In order to control for macroeconomic factors affecting the industry as a whole, the same ratio as in (3) for each SIC industry category is computed, after excluding all firms included in the sample as well as firms which were involved in a major acquisition during the period 1972-86 as per the Roster for the 100 largest mergers published in the Mergers & Acquisition Journal. Also eliminated were firms which

were listed as the most active acquiring firms in terms of the number of acquisitions in the same Journal, which included firms acquiring a large number of small firms. The variables, CF(ind,t), MKTVALU(ind,t) and CFROAMV(ind,t) described in (1), (2) and (3) above were computed for each firm in each industry category and the median $CFROAMV_{(ind,t)}$ for each year for each industry is selected for purposes of controlling for macroeconomic changes. Separate computations were made using both (1) the 2-digit SIC industry classification and (2) the 4-digit SIC classification. This is done because of the following three reasons: (1) The four-digit SIC classification is more representative of the major business of the firm and hence, it is a suitable benchmark of firm performance; (2) However, in the case of diversified firms operating in more than one industry category, a broader measure of performance like the 2-digit SIC classification could be a more suitable benchmark and (3) each 2-digit SIC category includes far more firms than the 2-digit SIC category and this makes it a suitable proxy for macroeconomic changes as well. Thus, the variable CFROAMV(ind,t) was computed as follows:

$$CFROAMV(ind,t) = CF(ind,t) \,/\, MKTVALU(ind,t) \qquad (4)$$

where CFROAMV = Cash Flow Return on Market Value of Assets in terms of cash flow (computed the same way as the combined firm in equation (1)).

ind = Each 4-digit or 2-digit SIC industry category or firm in such category.

6. The Abnormal Operating Cash Flow Return on Market Value of Assets

is computed by subtracting (4) from (3). However, industry categories which do not contain at least 4 firms are deleted from the sample in order to ensure that this statistic is representative of the industry.

$$ABROACF(i,t) = CFROAMV(i,t) - CFROAMV(ind,t) \quad (5)$$

where ABROACF = Abnormal (industry-adjusted) Cash Flow Return on Market Value of Assets.

7. The ABROACF (Abnormal Cash Flow Return on Market Value of Assets) for each year between -1 to -5 years and +1 to +5 years is computed and the median values during the premerger period (ABPREROA) and the postmerger period (ABPOSROA) for each combined firm are used as test-statistics. In order to ensure that these values are not outliers, combined firms which do not have a minimum of three years' of the ABROACF variable during both the pre- and postmerger periods, are deleted from the final sample.

The method of computing the test-statistics in this study is identical to that of Healy et al (1992) except for the following:

1. This study uses SIC industry classification instead of the Value Line industry classification used by Healy et al (1992).

2. For the purpose of excluding the equity revaluations from the asset base, this study does not consider

previous bids from other bidders, if any, as was done by Healy et al (1992).

3. The present study also uses alternate methods in addition to those used by Healy et al (1992).

2.4.3: Models Used for Analysis:

This study uses three models to test the hypothesis in section 2.3.1, Regression Analysis, t-Test for paired median differences and non-parametric Wilcoxon Signed Rank Tests.

2.4.3.1: Regression Analysis:

The following regression model is used to test hypothesis :

$$ABPOSROA(post, c) = a + b.ABPREROA(pre, c) + e \quad (6)$$

where ABPOSROA (post, t) = median ABROACF during post-merger period;

ABPREROA (pre, t) = median ABROACF during the pre-merger period.

This model is same as the one used by Healy et al (1992) who state that their "measure of the abnormal industry-adjusted return is the intercept" a in (6) above. They claim that "The slope coefficient

b captures any correlation in cash flow returns between the pre- and postmerger years" and hence the intercept a "is therefore independent of premerger returns".

2.4.3.2: Paired t-Test for Difference of Medians:

This model tests for differences between the median values of the ABPOSCF (Abnormal industry-adjusted post-merger cash flow return on assets) and ABPRECF (Abnormal industry-adjusted pre-merger cash flow return on assets) for each combined firm.

2.4.3.3:Non-Parametric Test: Wilcoxon Signed Rank Tests:

Both the above parametric models assume normality of distribution of the data. Hence, the non-parametric Wilcoxon Signed Rank Test, which does not depend upon the normality assumption, is used. Moreover, there is no reason to assume that the financial statement variables are normally distributed.

The above tests are repeated for the sample firms with single acquisitions only as well as for the entire sample firms with both single and multiple acquisitions. The test statistics are computed with the following three variations:

1. The cash flow return on assets of the firm adjusted by their

respective 2-digit SIC industry categories without adjusting for the equity revaluations carried out by Healy et al (1992).

2. The cash flow return on assets of the firm adjusted by their respective 4-digit SIC industry categories without adjusting for the equity revaluations carried out by Healy et al (1992).

3. The cash flow return on assets of the firm adjusted by their respective 4-digit SIC industry categories after adjusting for the equity revaluations carried out by Healy et al (1992).

2.5: RESULTS :

Tables I to VI show summarized statistical data relating to operating performance for the different variations of this study.

TABLE I HERE

Table I relates to firms with single acquisitions only and uses the 2-digit SIC classification. Panel A shows detailed distribution of cash flow return on assets for the firm, for the industry and the industry-adjusted abnormal returns for the firm during the pre- and postmerger period. Both the firm and the industry show a declining trend in cash flow returns. However, the industry-adjusted median cash flow returns for the combined firms show a higher postmerger median of

0.026 compared to the corresponding premerger figure of 0.006. These results support the findings of Healy, et al (1992).

Table I (Panel B) shows that out of the 70 firms in our final sample, 42 combined firms showed improved postmerger performance and 28 firms showed poorer postmerger performance in comparison to the premerger period.

TABLE II HERE

Table II shows the statistical data relating to operating performance for the full sample, including multiple acquisitions, using the 2-digit SIC classification. Panel A shows that the industry-adjusted median cash flow return of 0.025 during the postmerger period is an improvement over the corresponding premerger figure of 0.001, which confirms the pattern of Table I (Panel A). Panel B shows that 55 firms had improved postmerger performance whereas 32 had poorer postmerger performance.

TABLES III, IV, V and VI HERE

Tables III to VI show the statistical data relating to the operating performance using a 4-digit SIC classification with (Tables

V and VI) and without (Tables III and IV) making adjustment for the equity revaluations, for combined firms with single acquisitions only (Tables III and V) and for the full sample (Tables IV and VI). Panel A of all these Tables show the same pattern as Panel A of Tables I and II, i.e. improved postmerger performance. Panel B of these Tables show that firms with improved postmerger performance outnumber those with poorer postmerger performance.

Tables VII to XII show the results of the analysis, with Panel A showing the results of the regression, Panel B showing the results of the t-test and Panel C showing the results of the non-parametric Wilcoxon Signed Rank test.

TABLE VII HERE

The results of analysis presented in Table VII deal with the sample firms with only a single acquisition, using the 2-digit SIC classification for industry and without any adjustment for equity revaluations during the merger period. Table VII (Panel A) shows the results of the regression of industry-adjusted (2-digit SIC category) abnormal cash flow returns on assets (market value of common shares plus book value of debt and preferred shares minus cash and marketable securities) for the premerger period (independent variable) regressed on the same statistics of the postmerger period (dependent variable)

for those of the sample firms which have made a single acquisition according to our sample data. This is the same model adopted by Healy et al (1992). However, their study used Value Line Classification of industry and made adjustments for the equity revaluations.

The results of the regression of Table VII (Panel A) are very similar to that of Healy et al (1992). (see p. 146, Table 2, Panel B of Healy et al). In fact, the results for the intercept and the slope are even more significant than that of Healy et al (1992). and the signs of both are positive just as in Healy et al (1992). The results of this study also has higher R^2 and F-statistics. These results have been obtained without adjusting for the equity revaluations, which should only improve the results with the adjustment for equity revaluation, even more in favor of the combined firm performance during the postmerger period. (Hence, this analysis is not repeated with the equity revaluation adjustment for the 2-digit industry category.)

Table VII (Panel B) shows the results of the paired comparison t-test for the difference in the median ABPOSROA (Abnormal industry-adjusted postmerger cash flow return on assets) and the ABPREROA (Abnormal industry-adjusted premerger cash flow return on assets). The results show that the postmerger operating performance is significantly (0.037 level) better than that of the premerger period.

Table VII (Panel C) shows the results of the non-parametric Wil-

coxon Signed Rank test. The Wilcoxon Signed Rank test is significant at the 0.027 level with a positive sign, which supports the results of the t-test.

TABLE VIII HERE

Table VIII repeats the same analysis as in Table VII, but for all the sample firms in our data, which includes firms which made both single and multiple acquisitions.

The results of regression analysis in Panel A of Table VIII are similar to the ones in Panel A of Table VII for firms with only single acquisitions, but are more significant. Both the paired comparison t-test and the Wilcoxon Signed Rank test also show results at less than 0.01 level of significance and the signs of the coefficients are the same as in Table VII.

This indicates not only that the postmerger performance is superior to the premerger performance, but also that those firms which make multiple acquisitions are more successful in their postmerger performance. However, since the firms with multiple acquisitions cover a wider time span, the improved results could also be attributed to survivorship bias or to factors related to lapse of time.

TABLE IX HERE

The analysis in table VII is repeated in Table IX with the exception that industry ratios are computed using the 4-digit SIC category instead of the 2-digit industry category used in Table II. The results of the regression analysis on Panel A of Table IX is comparable to that of Healy et al (1992), but the coefficients are much less significant than those of Table VII for firms with single acquisitions only. The paired comparison t-test and non-parametric tests of Panels B and C show the same results of improved postmerger performance with positive signs for the test-statistics as was the case with Table VII but the results are not significant.

The results highlight the importance of the choice of the proxy for industry performance. Since the 2-digit SIC classification has larger numbers of firms in each industry category, it would probably represent a better measure for controlling for macroeconomic factors. However, it could be argued that the 4-digit SIC classification represents a more precise benchmark for evaluating the combined firm performance.

Since the signs of the coefficients are positive in both cases, whether 2-digit or 4-digit industry classification is used, it can be concluded with some degree of certainty that at least there is no

deterioration in postmerger performance and hence, the conclusions of some of the earlier studies, which found deteriorating postmerger performance, are probably attributable to sample specific factors, to mis-specification of models used for testing or to deficiencies in controlling for merger-induced and macroeconomic changes.

TABLE X HERE

Table X repeats the same analysis for all the sample firms including those with multiple acquisitions using the 4-digit SIC classification. The results of the regression analysis on Panel A is very similar to those obtained by Healy et al (1992). and the t-test and non-parametric tests of panels B and C have results with positive signs indicating superior postmerger performance. However, both the t-test and non-parametric test results are not significant even at less than 0.15 level even though both show considerable improvements over the results of Table IX for firms with single acquisitions.

This again shows that the selection of the industry-category is very important in determining the degree of success of mergers. However, the results show that postmerger operating performance has improved even though the level of significance depends upon the industry classification chosen for controlling for industry related factors.

TABLE XI HERE

Table XI shows results of the same analysis as in Table IX (firms with single acquisitions adjusted by 4-digit industry category) with the exception that the test statistics are computed after deducting the equity revaluations, in the same manner as Healy et al (1992), who argue that the changes in the stock prices of both the acquiring firm and the target firm/s from five days before the announcement of the merger to the effective date of the merger represent "the capitalized value of any expected postmerger performance improvements" in an efficient market and hence, they argue, that this amount should be excluded from the asset base during the postmerger period. Since most of these equity revaluations are positive, this adjustment should improve the results in favor of improved postmerger performance.

Results of the regression analysis in panel A of Table XI show positive intercept and slope coefficients but the slope coefficient is not significant. The adjustment of equity revaluations may have introduced some noise which makes the relationship of the dependent and independent variables less correlated. Panel B and Panel C of Table XI show results of paired comparison t-tests and non-parametric tests which show positive improvement during postmerger period but the results are not significant even at less than 0.15 level. However, the

results show improvement over Table IX results, which is understandable because of the effect of the adjustment for equity revaluations.

TABLE XII HERE

Results of the analysis for all the sample firms, both with single and multiple acquisitions, after making the adjustment for equity revaluations, deflated by 4-digit industry category, are shown in table XII. The regression analysis in Panel A shows results similar to that of Table XI. The paired comparison t-test and non-parametric Sign Rank test of panel B and C show results which are both positive and significant at less than 0.10 level.

Tables XIII to XVIII show comparative data relating to assets and cash flows. Panel A shows the average value of assets and cash flows per combined sample firm and their respective growth rates. Panel B shows the median growth rates of assets and cash flows for both the sample firms and the industry.

TABLE XIII HERE

Table XIII (Panels A and B) show comparative data relating to the growth in the asset values and cash flows for firms with single acquisitions only. The figures in Panel B indicate that there is a

declining trend in the cashflows for both the sample firms as well as for the industry as a whole. However, in the case of the market value of assets, the sample firms experience a declining trend with the postmerger median growth rate of assets declining to 9.1% from the premerger period's 10.1%, whereas, for the industry, it increased to 9.8% in the postmerger period from the premerger period's 9.3% . This seems to be crucial to the improvement in the postmerger cashflow return on assets. Such a result could occur in at least two ways: (1) by a decline in the market price of the common shares during the postmerger period and/or (2) by improved efficiency in managing assets during the postmerger period. Healy et al (1992) rule out the possibility of the former scenario.

TABLES XIV TO XVIII HERE

Tables XIV to XVIII show similar data for the different variations of the study.

2.5.1: Sensitivity Analysis:

An argument could be made that since some of the target firms included in the sample are relatively small compared to the acquiring firms, the above results need not represent the impact of mergers. To evaluate this possible criticism, the above analysis is repeated for a

sub-sample of combined firms in which the target firm/s account for at least 10% of the combined size in terms of the market value of assets at the beginning of one year before the merger year.

TABLES XIX & XX HERE

The results of both the t-test for median differences (comparable to Panel B of Tables VII to XII) and Wilcoxon Signed Rank Test (included in Panel C of these Tables) for this sub-sample are shown on Table XIX and XX respectively. The results of Table XX for non-parametric Wilcoxon Signed Rank Tests are not very different from earlier results - with significant improvement in postmerger performance if the 2-digit industry classification is used and insignificant results in other cases. However, the results of Table XIX for the t-test shows some deterioration (although not significant) in the analysis using the 4-digit industry classification, both with and without adjustment for equity revaluations. The results of the analysis using the 2-digit industry classification continues to show positive improvement at a significance level of 0.1617 for firms with single acquisitions only and at 0.0696 level for the full sample[1].

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[1]. On closer examination, it was found that there were three outliers with significant deterioration in postmerger performance: Allis-Chalmers' acquisition of American Filter Co. in 1978 for $148 million; General Host Corporation's acquisition of Frank's Nursery & Craft Inc. in 1982 for $44 million and Prime Motor Inn's acquisition of American Motor Inns in 1984 for $27 million.

2.6: DISCUSSION:

The above analysis shows that on average the postmerger performance of combined firms arising out of mergers improve over their premerger performance. However, the extent of such improvement is dependent on two factors : (1) the industry classification used to control for changes in industry-related factors and (2) how the equity revaluations during the merger period are treated. The postmerger performance is significantly superior if the 2-digit industry category is used for controlling for macroeconomic changes whereas it is not statistically significant if the 4-digit category is used. Similarly, making adjustments for the equity revaluations show more significant improvement in postmerger performance than otherwise (but not necessarily statistically significant). The results also show that firms which engage in multiple acquisitions show more improved postmerger performance.

A case can be made for using the 2-digit industry category for deflating the firm ratios. In today's economy most firms operate in more than one line of business and it is likely that these lines of business have some commonality if not relatedness. A 2-digit classification would capture this more effectively than a 4-digit category. Moreover, the 2-digit industry category would have more firms within each industry category than the 4-digit category (even though this

study excluded industry categories with less than 4 firms from the final sample) and hence, would be more representative of the economy at the macro level.

As for the equity revaluation adjustment, the argument that it reflects the expectation of improvement in postmerger performance, needs further examination. However, this study shows that even if we disregard this adjustment, the postmerger performance of the combined firms is by and large an improvement of their premerger performance.

However, these findings have some limitations. Because this study covers a long period of time of about 11 years (5 premerger years and 5 postmerger years excluding the merger year), there could be some survivorship bias. However, there is no evidence to show that firms which engage in acquisitions have any greater probability of financial distress than other firms which do not, even though cases of some large acquisitions which went sour, such as, Campeau Corporation, received considerable publicity. There is also some evidence that the improved postmerger performance is more likely the result of smaller growth in assets during the postmerger period than due to any improvement in cashflows. Healy et al (1992) find no evidence that this is due to stock market inefficiencies. However, this remains to be examined in greater detail.

2.7: SUMMARY & CONCLUSION:

This study examined the postmerger performance of a sample of combined firms resulting from mergers and tender offers by U.S. firms using cash flow measures of return on market value of assets. It found that postmerger performance improves in general. However, the degree of such improvement is contingent on the industry classification used for controlling for macroeconomic changes as well as the treatment of equity revaluation. Hence, the postmerger improvement cannot be considered as substantial, even though it can be concluded that there is no deterioration in postmerger performance.

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TABLE I
STATISTICAL DATA RELATING TO OPERATING PERFORMANCE

INDUSTRY-ADJUSTED (2-DIGIT SIC) OPERATING CASH FLOW PERFORMANCE OF COMBINED FIRMS WITH SINGLE ACQUISITIONS ONLY WITHOUT EQUITY REVALUATIONS

Panel A: Pre- and Postmerger operating cash flow returns

Years relative to merger	Industry-adjusted median	Firm median	Industry median
- 5	-0.002	0.170	0.163
- 4	0.004	0.177	0.179
- 3	0.008	0.181	0.189
- 2	0.013	0.190	0.189
- 1	0.020	0.178	0.176
Median for years -5 to -1 ..	0.006	0.178	0.180
1	0.012	0.161	0.153
2	0.030	0.157	0.131
3	0.027	0.143	0.119
4	0.024	0.138	0.112
5	0.040	0.138	0.103
Median for years 1 to 5 ..	0.026	0.146	0.120

Panel B: Number of combined firms with improved postmerger performance and vice versa

Combined firms with improved postmerger performance (ABPOSROA > ABPREROA)	..	42
Combined firms with lower postmerger performance (ABPOSROA < ABPREROA)	..	28
Total	..	70

ABPOSROA = Abnormal industry-adjusted median postmerger cash flow return on assets.
ABPREROA = Abnormal industry-adjusted median premerger cash flow return on assets.

TABLE II
STATISTICAL DATA RELATING TO OPERATING PERFORMANCE

INDUSTRY-ADJUSTED (2-DIGIT SIC) OPERATING CASH FLOW PERFORMANCE OF COMBINED FIRMS WITH SINGLE AND MULTIPLE ACQUISITIONS EXCLUDING EQUITY REVALUATIONS

Panel A: Pre- and Postmerger operating cash flow returns

Years relative to merger	Industry-adjusted median	Firm median	Industry median
- 5	-0.006	0.162	0.162
- 4	0.000	0.171	0.177
- 3	-0.003	0.175	0.183
- 2	0.004	0.182	0.186
- 1	0.007	0.176	0.183
Median for years -5 to -1 ..	0.000	0.174	0.179
1	0.010	0.156	0.145
2	0.029	0.145	0.125
3	0.026	0.141	0.117
4	0.025	0.138	0.111
5	0.033	0.137	0.103
Median for years 1 to 5 ..	0.025	0.143	0.118

Panel B: Number of combined firms with improved postmerger performance and vice versa

Combined firms with improved postmerger performance (ABPOSROA > ABPREROA)	..	55
Combined firms with lower postmerger performance (ABPOSROA < ABPREROA)	..	32
Total	..	87

ABPOSROA = Abnormal industry-adjusted median postmerger cash flow return on assets.
ABPREROA = Abnormal industry-adjusted median premerger cash flow return on assets.

TABLE III
STATISTICAL DATA RELATING TO OPERATING PERFORMANCE

INDUSTRY-ADJUSTED (4 DIGIT) OPERATING CASH FLOW PERFORMANCE OF COMBINED FIRMS WITH SINGLE ACQUISITIONS WITHOUT EXCLUDING EQUITY REVALUATIONS

Panel A: Pre- and Postmerger operating cash flow returns

Years relative to merger	Industry-adjusted median	Firm median	Industry median
- 5	-0.003	0.170	0.159
- 4	0.007	0.177	0.168
- 3	0.011	0.181	0.168
- 2	0.002	0.190	0.171
- 1	0.016	0.178	0.170
Median for years -5 to -1 ..	0.006	0.178	0.167
1	0.006	0.161	0.162
2	0.014	0.157	0.146
3	0.019	0.143	0.128
4	0.032	0.138	0.113
5	0.042	0.138	0.103
Median for years 1 to 5 ..	0.019	0.146	0.125

Panel B: Number of combined firms with improved postmerger performance and vice versa

Combined firms with improved postmerger performance (ABPOSROA > ABPREROA)	..	37
Combined firms with lower postmerger performance (ABPOSROA < ABPREROA)	..	32
Total	..	69

ABPOSROA = Abnormal industry-adjusted median postmerger cash flow return on assets.
ABPREROA = Abnormal industry-adjusted median premerger cash flow return on assets.

TABLE IV
STATISTICAL DATA RELATING TO OPERATING PERFORMANCE

INDUSTRY-ADJUSTED (4 DIGIT) OPERATING CASH FLOW PERFORMANCE OF COMBINED FIRMS WITH SINGLE AND MULTIPLE ACQUISITIONS WITHOUT EXCLUDING EQUITY REVALUATIONS

Panel A: Pre- and Postmerger operating cash flow returns

Years relative to merger	Industry-adjusted median	Firm median	Industry median
- 5	-0.006	0.162	0.152
- 4	0.006	0.171	0.169
- 3	0.005	0.175	0.166
- 2	0.001	0.182	0.169
- 1	0.011	0.176	0.179
Median for years -5 to -1 ..	0.003	0.174	0.167
- 1	0.001	0.156	0.158
- 2	0.012	0.145	0.139
- 3	0.020	0.141	0.124
- 4	0.027	0.138	0.111
- 5	0.037	0.137	0.103
Median for years 1 to 5 ..	0.016	0.143	0.121

Panel B: Number of combined firms with improved postmerger performance and vice versa

Combined firms with improved postmerger performance (ABPOSROA > ABPREROA)	..	48
Combined firms with lower postmerger performance (ABPOSROA < ABPREROA)	..	38
Total	..	86

ABPOSROA = Abnormal industry-adjusted median postmerger cash flow return on assets.
ABPREROA = Abnormal industry-adjusted median premerger cash flow return on assets.

TABLE V
STATISTICAL DATA RELATING TO OPERATING PERFORMANCE

INDUSTRY-ADJUSTED (4 DIGIT) OPERATING CASH FLOW PERFORMANCE OF COMBINED FIRMS WITH SINGLE ACQUISITIONS ONLY AFTER DEDUCTING EQUITY REVALUATIONS

Panel A: Pre- and Postmerger operating cash flow returns

Years relative to merger	Industry-adjusted median	Firm median	Industry median
- 5	- 0.004	0.173	0.159
- 4	0.006	0.177	0.168
- 3	0.008	0.184	0.168
- 2	0.005	0.192	0.171
- 1	0.016	0.178	0.170
Median for years -5 to -1 ..	0.006	0.180	0.167
1	0.007	0.164	0.162
2	0.025	0.162	0.146
3	0.030	0.148	0.128
4	0.034	0.142	0.113
5	0.044	0.141	0.103
Median for years 1 to 5 ..	0.028	0.150	0.125

Panel B: Number of combined firms with improved postmerger performance and vice versa

Combined firms with improved postmerger performance (ABPOSROA > ABPREROA)	..	33
Combined firms with lower postmerger performance (ABPOSROA < ABPREROA)	..	27
Total	..	60

ABPOSROA = Abnormal industry-adjusted median postmerger cash flow return on assets.
ABPREROA = Abnormal industry-adjusted median premerger cash flow return on assets.

TABLE VI
STATISTICAL DATA RELATING TO OPERATING PERFORMANCE

INDUSTRY-ADJUSTED (4 DIGIT) OPERATING CASH FLOW PERFORMANCE OF COMBINED FIRMS WITH SINGLE AND MULTIPLE ACQUISITIONS AFTER DEDUCTING EQUITY REVALUATIONS

Panel A: Pre- and Postmerger operating cash flow returns

Years relative to merger	Industry-adjusted median	Firm median	Industry median
- 5	-0.010	0.163	0.152
- 4	0.006	0.173	0.169
- 3	0.003	0.175	0.166
- 2	0.002	0.189	0.169
- 1	0.011	0.177	0.179
Median for years -5 to -1 ..	0.003	0.176	0.167
1	0.003	0.160	0.158
2	0.021	0.156	0.139
3	0.026	0.147	0.124
4	0.031	0.142	0.111
5	0.038	0.140	0.103
Median for years 1 to 5 ..	0.023	0.147	0.121

Panel B: Number of combined firms with improved postmerger performance and vice versa

Combined firms with improved postmerger performance (ABPOSROA > ABPREROA)	..	44
Combined firms with lower postmerger performance (ABPOSROA < ABPREROA)	..	32
Total	..	76

ABPOSROA = Abnormal industry-adjusted median postmerger cash flow return on assets.
ABPREROA = Abnormal industry-adjusted median premerger cash flow return on assets.

TABLE VII

RESULTS OF ANALYSIS INDUSTRY-ADJUSTED (2-DIGIT SIC) OPERATING CASH FLOW PERFORMANCE OF COMBINED FIRMS WITH SINGLE ACQUISITIONS ONLY WITHOUT EQUITY REVALUATIONS

Panel A: Results of Simple Regression
(t-values in parenthesis)

$$ABPOSROA_{(post,c)} = \underset{(3.102)^1}{0.018} + \underset{(4.368)^1}{0.474}\ ABPREROA_{(pre,c)}$$

F-statistic: 19.082 R^2 : 0.219 N : 69
Adj-R^2 : 0.208

Panel B: Paired Comparison t-test for the difference in median values of ABPOSROA and ABPREROA

Test statistic: DIFABROA (ABPOSROA - ABPREROA):

Median ABPOSROA	..	0.022
Median ABPREROA	..	0.007
Test Statistic - DIFABROA		0.014

T-statistic: 2.127 Prob: 0.037 N: 70

Panel C: Results of non-parametric tests on DIFABROA

Wilcoxon Sign Rank: 374.5 Prob: 0.027 N: 70

ABPOSROA = Abnormal industry-adjusted median postmerger cashflow return on assets.
ABPREROA = Abnormal industry-adjusted median premerger cashflow return on assets.

1 = Significant at < 0.01 level.
2 = Significant at < 0.05 level (except when used for squared.)
3 = Significant at < 0.10 level.
4 = Significant at < 0.15 level.

TABLE VIII

RESULTS OF ANALYSIS

INDUSTRY-ADJUSTED (2-DIGIT SIC) OPERATING CASH FLOW PERFORMANCE OF COMBINED FIRMS WITH SINGLE AND MULTIPLE ACQUISITIONS WITHOUT EQUITY REVALUATIONS

Panel A: Results of Simple Regression
(t-values in parenthesis)

$$ABPOSROA_{(post,c)} = \underset{(3.924)^1}{0.019} + \underset{(4.578)^1}{0.447}\ ABPREROA_{(pre,c)}$$

F-statistic: 20.961 R^2 : 0.198 N : 86
Adj-R^2 : 0.188

Panel B: Paired Comparison t-test for the difference in median values of ABPOSROA and ABPREROA

Test statistic: DIFABROA (ABPOSROA - ABPREROA):

Median ABPOSROA	..	0.021
Median ABPREROA	..	0.003
Test Statistic - DIFABROA		0.018

T-statistic: 3.059 Prob: 0.003 N: 87

Panel C: Results of non-parametric tests on DIFABROA

Wilcoxon Sign Rank: 748 Prob: 0.0012 N: 87

ABPOSROA = Abnormal industry-adjusted median postmerger cashflow return on assets.
ABPREROA = Abnormal industry-adjusted median premerger cashflow return on assets.
1 = Significant at < 0.01 level.
2 = Significant at < 0.05 level (except when used for squared.)
3 = Significant at < 0.10 level.
4 = Significant at < 0.15 level.

TABLE IX

RESULTS OF ANALYSIS

INDUSTRY-ADJUSTED (4 DIGIT) OPERATING CASH FLOW PERFORMANCE OF COMBINED FIRMS WITH SINGLE ACQUISITIONS WITHOUT EXCLUDING EQUITY REVALUATIONS

Panel A: Results of Simple Regression
(t-values in parenthesis)

$$ABPOSROA_{(post,c)} = \underset{(1.966)^2}{0.013} + \underset{(2.091)^2}{0.243}\ ABPREROA_{(pre,c)}$$

F-statistic: 4.372 R^2 : 0.061 N : 68
Adj-R^2 : 0.047

Panel B: Paired Comparison t-test for the difference in median values of ABPOSROA and ABPREROA

Test statistic: DIFABROA (ABPOSROA - ABPREROA):

Median ABPOSROA	..	0.0166
Median ABPREROA	..	0.0136
Test Statistic - DIFABROA		0.0030

T-statistic: 0.356 Prob: 0.723 N: 69

Panel C: Results of non-parametric tests on DIFABROA

Wilcoxon Sign Rank: 101.5 Prob: 0.548 N: 69

ABPOSROA = Abnormal industry-adjusted median postmerger cashflow return on assets.
ABPREROA = Abnormal industry-adjusted median premerger cashflow return on assets.
1 = Significant at < 0.01 level.
2 = Significant at < 0.05 level (except when used for squared.)
3 = Significant at < 0.10 level.
4 = Significant at < 0.15 level.

TABLE X

RESULTS OF ANALYSIS

INDUSTRY-ADJUSTED (4 DIGIT) OPERATING CASH FLOW PERFORMANCE OF COMBINED FIRMS WITH SINGLE AND MULTIPLE ACQUISITIONS WITHOUT EXCLUDING EQUITY REVALUATIONS

Panel A: Results of Simple Regression
(t-values in parenthesis)

$$ABPOSROA_{(post,c)} = \underset{(2.592)^1}{0.015} + \underset{(1.995)^2}{0.202}\ ABPREROA_{(pre,c)}$$

F-statistic: 3.980 R^2 : 0.045 N : 85
Adj-R^2 : 0.034

Panel B: Paired Comparison t-test for the difference in median values of ABPOSROA and ABPREROA

Test statistic: DIFABROA (ABPOSROA - ABPREROA):

Median ABPOSROA	..	0.016
Median ABPREROA	..	0.007
Test Statistic - DIFABROA		0.009

T-statistic: 1.216 Prob: 0.228 N: 86

Panel C: Results of non-parametric tests on DIFABROA

Wilcoxon Sign Rank: 310.5 Prob: 0.183 N: 86

ABPOSROA = Abnormal industry-adjusted median postmerger cashflow return on assets.
ABPREROA = Abnormal industry-adjusted median premerger cashflow return on assets.
1 = Significant at < 0.01 level.
2 = Significant at < 0.05 level (except when used for squared.)
3 = Significant at < 0.10 level.
4 = Significant at < 0.15 level.

TABLE XI
RESULTS OF ANALYSIS

INDUSTRY-ADJUSTED (4 DIGIT) OPERATING CASH FLOW PERFORMANCE OF COMBINED FIRMS WITH SINGLE ACQUISITIONS ONLY AFTER DEDUCTING EQUITY REVALUATIONS

Panel A: Results of Simple Regression
(t-values in parenthesis)

$$ABPOSROA_{(post,c)} = \underset{(2.661)^1}{0.019} + \underset{(1.383)}{0.176}\ ABPREROA_{(pre,c)}$$

F-statistic: 1.913 R^2 : 0.032 N : 59
Adj-R^2 : 0.015

Panel B: Paired Comparison t-test for the difference in median values of ABPOSROA and ABPREROA

Test statistic: DIFABROA (ABPOSROA - ABPREROA):

Median ABPOSROA ..	0.022
Median ABPREROA ..	0.013
Test Statistic - DIFABROA	0.009

T-statistic: 0.983 Prob: 0.330 N : 60

Panel C: Results of non-parametric tests on DIFABROA

Wilcoxon Sign Rank: 146 Prob: 0.286 N : 60

ABPOSROA = Abnormal industry-adjusted median postmerger cashflow return on assets.
ABPREROA = Abnormal industry-adjusted median premerger cashflow return on assets.
1 = Significant at < 0.01 level.
2 = Significant at < 0.05 level (except when used for squared.)
3 = Significant at < 0.10 level.
4 = Significant at < 0.15 level.

TABLE XII
RESULTS OF ANALYSIS

INDUSTRY-ADJUSTED (4 DIGIT) OPERATING CASH FLOW PERFORMANCE OF COMBINED FIRMS WITH SINGLE AND MULTIPLE ACQUISITIONS AFTER DEDUCTING EQUITY REVALUATIONS

Panel A: Results of Simple Regression
(t-values in parenthesis)

$$ABPOSROA_{(post,c)} = \underset{(3.344)^1}{0.020} + \underset{(1.282)}{0.139}\ ABPREROA_{(pre,c)}$$

F-statistic: 1.643 R^2 : 0.022 N : 75
Adj-R^2 : 0.009

Panel B: Paired Comparison t-test for the difference in median values of ABPOSROA and ABPREROA

Test statistic: DIFABROA (ABPOSROA - ABPREROA):

Median ABPOSROA	..	0.021
Median ABPREROA	..	0.006
Test Statistic - DIFABROA		0.015

T-statistic: 1.826 Prob: 0.072 N: 76

Panel C: Results of non-parametric tests on DIFABROA

Wilcoxon Sign Rank: 337 Prob: 0.081 N: 76

ABPOSROA = Abnormal industry-adjusted median postmerger cashflow return on assets.
ABPREROA = Abnormal industry-adjusted median premerger cashflow return on assets.
1 = Significant at < 0.01 level.
2 = Significant at < 0.05 level (except when used for squared.)
3 = Significant at < 0.10 level.
4 = Significant at < 0.15 level.

TABLE XIII
COMPARATIVE DATA RELATING TO ASSETS AND CASH FLOW

INDUSTRY-ADJUSTED (2-DIGIT SIC) OPERATING CASH FLOW PERFORMANCE OF COMBINED FIRMS WITH SINGLE ACQUISITIONS ONLY WITHOUT EQUITY REVALUATIONS

Panel A: Average Value of Assets and Cash Flow for Sample Firms (figures in million dollars and growth rates in percentages)

Period	Sample Firms			
	Average Asset per firm	Asset growth rate (%)	Average Cashflow per firm	C.F. growth rate (%)
- 5	3503.19	-	723.92	-
- 4	3584.33	2.3	762.01	5.3
- 3	3992.04	11.4	780.80	2.5
- 2	4194.59	5.1	862.03	10.4
- 1	5506.91	31.3	1078.81	25.2
1	6185.40	-	1037.22	-
2	7135.75	15.4	1017.40	- 1.9
3	7158.16	0.3	1052.07	3.4
4	7744.05	8.2	1160.17	10.3
5	8624.03	11.4	1303.88	12.4

Panel B: Median Growth Rates of Sample Firms & Industry (Growth Rates in Percentages)

Period	Sample Firms		Industry	
	Assets	Cash Flow	Assets	Cash Flow
- 5	-	-	-	-
- 4	4.5	13.7	6.7	10.3
- 3	8.5	10.7	6.8	11.0
- 2	6.6	16.6	12.1	11.6
- 1	16.4	13.8	12.2	11.2
Median for years -4 to -1	10.1	13.7	9.3	11.1
1	-	-	-	-
2	10.1	6.5	10.6	7.9
3	12.1	3.6	6.9	4.3
4	5.6	7.5	3.0	2.8
5	4.6	7.4	8.3	5.8
Median for years 1 to 4	9.1	7.4	9.8	6.3

TABLE XIV
COMPARATIVE DATA RELATING TO ASSETS AND CASH FLOW

INDUSTRY-ADJUSTED (2-DIGIT SIC) OPERATING CASH FLOW PERFORMANCE OF COMBINED FIRMS WITH SINGLE AND MULTIPLE ACQUISITIONS EXCLUDING EQUITY REVALUATIONS

Panel A: Average Assets and Cash Flow for Sample Firms
(figures in million dollars and growth rates in percentages)

	Sample Firms			
Period	Average Asset per firm	Asset growth rate	Average Cashflow per firm	C.F. growth rate
- 5	3159.91	-	635.87	
- 4	3235.32	2.4	669.73	5.3
- 3	3518.61	8.8	670.30	0.1
- 2	3711.92	5.5	743.40	10.9
- 1	4703.02	26.7	897.22	20.7
1	5890.38	-	947.98	-
2	6755.18	14.7	942.29	- 0.6
3	6756.30	0.0	977.14	3.7
4	7300.65	8.1	1088.63	11.4
5	8109.44	11.1	1206.32	10.8

Panel B: Median Growth Rates of Sample Firms & Industry
(Growth Rates in Percentages)

Period	Sample Firms		Industry	
	Assets	Cash Flow	Assets	Cash Flow
- 5	-	-	-	-
- 4	4.3	15.4	6.8	11.6
- 3	7.9	12.3	6.1	11.6
- 2	5.4	17.6	9.7	11.6
- 1	15.6	14.2	12.1	11.4
Median for years -4 to -1	9.6	14.3	8.7	11.4
1	-	-	-	-
2	9.3	7.3	11.4	8.4
3	10.6	7.5	5.9	4.6
4	5.8	7.5	2.6	3.3
5	3.8	7.4	7.7	5.4
Median for years 1 to 4	8.4	7.5	9.8	6.5

TABLE XV
COMPARATIVE DATA RELATING TO ASSETS AND CASH FLOW

INDUSTRY-ADJUSTED (4 DIGIT) OPERATING CASH FLOW PERFORMANCE OF COMBINED FIRMS WITH SINGLE ACQUISITIONS WITHOUT EXCLUDING EQUITY REVALUATIONS

Panel A: Average Assets and Cash Flow for Sample Firms
(figures in million dollars and growth rates in percentages)

Period	Sample Firms			
	Average Asset per firm	Asset growth rate (%)	Average Cashflow per firm	C.F. growth rate (%)
- 5	3503.19	-	723.92	-
- 4	3584.33	2.3	762.01	5.3
- 3	3992.04	11.4	780.80	2.5
- 2	4194.59	5.1	862.03	10.4
- 1	5506.91	31.3	1078.81	25.2
1	6185.40	-	1037.22	-
2	7135.75	15.4	1017.40	- 1.9
3	7158.16	0.3	1052.07	3.4
4	7744.05	8.2	1160.17	10.3
5	8624.03	11.4	1303.88	12.4

Panel B: Median Growth Rates of Sample Firms & Industry
(Growth Rates in Percentages)

Period	Sample Firms		Industry	
	Assets	Cash Flow	Assets	Cash Flow
- 5	-	-	-	-
- 4	4.5	13.7	7.0	14.5
- 3	8.5	10.7	7.6	12.5
- 2	6.6	16.6	8.8	14.2
- 1	16.4	13.8	16.9	11.2
Median for years -4 to -1	10.1	13.7	9.4	13.1
1	-	-	-	-
2	10.1	6.5	13.6	7.1
3	12.1	3.6	8.9	4.9
4	5.6	7.5	8.9	2.0
5	4.6	7.4	5.6	1.9
Median for years 1 to 4	9.1	7.4	10.6	5.7

TABLE XVI
COMPARATIVE DATA RELATING TO ASSETS AND CASH FLOW

INDUSTRY-ADJUSTED (4 DIGIT) OPERATING CASH FLOW PERFORMANCE OF COMBINED FIRMS WITH SINGLE AND MULTIPLE ACQUISITIONS WITHOUT EXCLUDING EQUITY REVALUATIONS

Panel A: Average Assets and Cash Flow for Sample Firms
(figures in million dollars and growth rates in percentages)

	Sample Firms			
Period	Average Asset per firm	Asset growth rate	Average Cashflow per firm	C.F. growth rate
- 5	3159.91	-	635.87	-
- 4	3235.32	2.4	669.73	5.3
- 3	3518.61	8.8	670.30	0.1
- 2	3711.92	5.5	743.40	10.9
- 1	4703.02	26.7	897.22	20.7
1	5890.38	-	947.98	-
2	6755.18	14.7	942.29	- 0.6
3	6756.30	0.0	977.14	3.7
4	7300.65	8.1	1088.63	11.4
5	8109.44	11.1	1206.32	10.8

Panel B: Median Growth Rates of Sample Firms & Industry
(Growth Rates in Percentages)

Period	Sample Firms		Industry	
	Assets	Cash Flow	Assets	Cash Flow
- 5	-	-	-	-
- 4	4.3	15.4	5.7	14.9
- 3	7.9	12.3	4.5	13.7
- 2	5.4	17.6	9.1	14.5
- 1	15.6	14.2	14.2	12.8
Median for years -4 to -1	9.6	14.3	8.3	14.4
1	-	-	-	-
2	9.3	7.3	13.8	7.1
3	10.6	7.5	5.4	4.3
4	5.8	7.5	6.0	1.2
5	3.8	7.4	6.1	2.0
Median for years 1 to 4	8.4	7.5	10.0	5.6

TABLE XVII
COMPARATIVE DATA RELATING TO ASSETS AND CASH FLOW

INDUSTRY-ADJUSTED (4 DIGIT) OPERATING CASH FLOW PERFORMANCE OF COMBINED FIRMS WITH SINGLE ACQUISITIONS ONLY AFTER DEDUCTING EQUITY REVALUATIONS

Panel A: Average Assets and Cash Flow of Sample Firms
(figures in million dollars and growth rates in percentages)

Period	Sample Firms			
	Average Asset per firm	Asset growth rate (%)	Average Cashflow per firm	C.F. growth rate (%)
- 5	3503.19	-	723.92	-
- 4	3584.33	2.3	762.01	5.3
- 3	3992.04	11.4	780.80	2.5
- 2	4194.59	5.1	862.03	10.4
- 1	5506.91	31.3	1078.81	25.2
1	6082.53	-	1037.22	-
2	7032.88	15.6	1017.40	- 1.9
3	7055.29	0.3	1052.07	3.4
4	7641.74	8.3	1160.17	10.3
5	8519.58	11.5	1303.88	12.4

Panel B: Median Growth Rates of Sample Firms & Industry
(Growth Rates in Percentages)

Period	Sample Firms		Industry	
	Assets	Cash Flow	Assets	Cash Flow
- 5	-	-	-	-
- 4	4.5	13.7	7.0	14.5
- 3	8.5	10.7	7.6	12.5
- 2	6.6	16.6	8.8	14.2
- 1	16.4	13.8	16.9	11.2
Median for years -4 to -1	10.1	13.7	9.4	13.1
1	-	-	-	-
2	11.7	6.5	13.6	7.1
3	11.9	3.6	8.9	4.9
4	5.1	7.5	8.9	2.0
5	4.4	7.4	5.6	1.9
Median for years 1 to 4	10.2	7.4	10.6	5.7

TABLE XVIII
COMPARATIVE DATA RELATING TO ASSETS AND CASH FLOW

INDUSTRY-ADJUSTED (4 DIGIT) OPERATING CASH FLOW PERFORMANCE OF COMBINED FIRMS WITH SINGLE AND MULTIPLE ACQUISITIONS AFTER DEDUCTING EQUITY REVALUATIONS

Panel A: Average Assets and Cash Flow for Sample Firms
(figures in million dollars and growth rates in percentages)

Period	Sample Firms			
	Average Asset per firm	Asset growth rate	Average Cashflow per firm	C.F. growth rate
- 5	3159.91	-	635.87	-
- 4	3235.32	2.4	669.73	5.3
- 3	3518.61	8.8	670.30	0.1
- 2	3711.92	5.5	743.40	10.9
- 1	4703.02	26.7	897.22	20.7
1	5787.82	-	947.98	-
2	6652.62	14.9	942.29	- 0.6
3	6653.73	0.0	977.14	3.7
4	7200.73	8.2	1088.63	11.4
5	8014.45	11.3	1206.32	10.8

Panel B: Median Growth Rates of Sample Firms & Industry
(Growth Rates in Percentages)

Period	Sample Firms		Industry	
	Assets	Cash Flow	Assets	Cash Flow
- 5	-	-	-	-
- 4	4.3	15.4	5.7	14.9
- 3	7.9	12.3	4.5	13.7
- 2	5.4	17.6	9.1	14.5
- 1	15.6	14.2	14.2	12.8
Median for years -4 to -1	9.6	14.3	8.3	14.4
1	-	-	-	-
2	10.9	7.2	13.8	7.1
3	11.7	7.5	5.4	4.3
4	5.2	7.5	6.0	1.2
5	4.0	7.4	6.1	2.0
Median for years 1 to 4	9.0	7.5	10.0	5.6

TABLE XIX
RESULTS OF PAIRED COMPARISON T-TEST FOR
MEDIAN DIFFERENCES BETWEEN ABPOSROA MINUS ABPREROA
ON A SUB-SAMPLE WITH RELATIVE SIZE OF THE TARGET
10% OR MORE

Method of Calculation	Mean Value	T-stat.	Prob.	N
Panel A: Results for Firms with Single Acquisitions Only				
1. Ratios deflated by 2-digit SIC industry classification without equity revaluation	0.011	1.427	0.162	+27 -12 39
2. Ratios deflated by 4-digit SIC industry classification without equity revaluation	-0.009	-0.999	0.324	+18 -20 38
3. Ratios deflated by 4-digit SIC industry classification after eliminating equity revaluations (HPR et al)	-0.002	-0.166	0.869	+17 -17 34
Panel B: Results for all Firms in the Sub-Sample				
1. Ratios deflated by 2-digit SIC industry classification without equity revaluation	0.013	1.860	0.070	+33 -12 45
2. Ratios deflated by 4-digit SIC industry classification without equity revaluation	-0.008	-0.928	0.359	+22 -22 44
3. Ratios deflated by 4-digit SIC industry classification after eliminating equity revaluations (HPR et al)	-0.000	-0.043	0.966	+22 -18 40

ABPOSROA = Abnormal industry-adjusted median postmerger cashflow return on assets.
ABPREROA = Abnormal industry-adjusted median premerger cashflow return on assets.
N = Number of Firms in the Sample (Positive and Negative signs indicate the signs of the difference in median ABPOSROA minus ABPREROA)

TABLE XX
RESULTS OF NON-PARAMETRIC WILCOXON SIGN RANK TEST ON MEDIAN DIFFERENCES BETWEEN ABPOSROA MINUS ABPREROA ON A SUB-SAMPLE WITH RELATIVE SIZE OF THE TARGET 10% OR MORE

Method of Calculation	Sign Rank	Prob.	N
Panel A: Results for Firms with Single Acquisitions Only			
1. Ratios deflated by 2-digit SIC industry classification without equity revaluation	141	0.048	39
2. Ratios deflated by 4-digit SIC industry classification without equity revaluation	- 35.5	0.613	38
3. Ratios deflated by 4-digit SIC industry classification after eliminating equity revaluations (HPR et al)	0.5	0.993	34
Panel B: Results for all Firms in the Sub-Sample			
1. Ratios deflated by 2-digit SIC industry classification without equity revaluation	228.5	0.008	45
2. Ratios deflated by 4-digit SIC industry classification without equity revaluation	- 31	0.722	44
3. Ratios deflated by 4-digit SIC industry classification after eliminating equity revaluations (HPR et al)	12	0.874	40

ABPOSROA = Abnormal industry-adjusted median postmerger cashflow return on assets.
ABPREROA = Abnormal industry-adjusted median premerger cashflow return on assets.
N = Number of Firms in the Sample

CHAPTER 3: DETERMINANTS OF POST-MERGER OPERATING PERFORMANCE

3.1: INTRODUCTION:

Mergers and acquisitions (M&A) have brought about a significant change in the corporate landscape of America. There is a consensus among the event-studies which examined the stock-price effect of merger announcements that the target shareholders gain significantly and the bidder shareholders do not lose (Jensen & Ruback, 1983; Jarrell Brickley & Netter, 1988). This result has been interpreted as value-creating and synergistic (Bradley, Desai & Kim, 1988; Anju Seth, 1990).

However, there is a paucity of research into the long-term consequences of mergers and in particular, of studies examining the sources of such synergy, if they exist at all, over a longer time horizon. The recent studies (Ravenscraft & Scherer, 1989; Healy Palepu & Ruback, 1992) find contradictory results. These studies do not attempt to systematically examine the factors associated with the long-term success or failure of M&A and use small sample sizes.

The previous chapter and the Healy et al (1992) study compared the postmerger performance of combined firms resulting from mergers with their premerger performance and found that there is generally an improvement in postmerger performance. These studies, however, failed to examine the cross sectional relationship between postmerger

performance and factors that have been found to explain the short-term performance of stock prices at the announcement of a merger by a bidding firm. These factors include stock ownership, method of payment, existence of long-term performance plans and size.

The present study extends the previous study by attempting to find factors which are associated with the postmerger performance of both the acquiring firm as well as the combined firm resulting from a merger. Both the acquiring firms' and the combined firms' performance is measured by comparing post-merger cash flow measures of asset productivity with those of the pre-merger period. If the median postmerger cash flow return on assets is higher than the comparable premerger figure, the merger is treated as a success and vice versa.

The study, using multivariate regression analysis (using OLS model), examines the association between the change in financial operating performance of the combined firm as well as the acquiring firm with a number of factors, such as, relatedness, type of acquisition, managerial stockholdings, method of payment, existence of performance plans for managers and size. The results of this study should be of interest to investors, managers, Government, academics and the general public because it would shed some light into the factors associated with the postmerger performance of mergers and acquisitions.

This paper is organized as follows: Part 3.2 reviews the literature on the subject and identifies the variables to be tested, part 3.3 explains the data, methodology and model used, part 3.4 examines the results of the regression analysis, part 3.5 is discussion and part 3.6 is conclusion.

3.2: LITERATURE REVIEW AND HYPOTHESES:

This section examines the research in the areas of (1) Theoretical Studies, (2) Empirical Market Studies (Short Term) and (3) Empirical Studies using Accounting Data (Long Term).

3.2.1: Theoretical Studies:

There have been some theoretical studies which have implications for post-merger performance, such as, (a) the Synergy or Efficiency Hypothesis, (b) the Market for Corporate Control Hypothesis, (c) the Free Cash Flow Hypothesis, (d) Agency Theory and the Managerial Self-interest Hypothesis.

3.2.1.A: Synergy Hypothesis:

The economics literature postulates diminishing marginal productivity and U-shaped marginal and average cost curves, implying that there is an optimum size which maximizes efficiency (McConnell &

Pope, 1984; Binger & Hoffman, 1985). International competition has generated popular support for the formation of large firms which could effectively compete in the global market. Synergies arise mainly from economies of scale and scope in production (including Research & Development), marketing and financing.

However, economies in production and marketing would accrue only to mergers of firms in the same or related industries, whereas financial economies would accrue to all mergers. The Synergy Hypothesis predicts that mergers of firms in closely related industries should outperform conglomerate mergers, since related industries alone would benefit from production and marketing economies.

Hence, this study hypothesizes positive association of relatedness of business with post-merger performance and uses the variable HIGHD (1 = if the businesses fall within the same 2-digit SIC category, 0 = if otherwise). The study also classifies the remaining mergers as MEDIUMD (1 = if the businesses have reasonable relatedness, 0 = if otherwise) and LOW (1 = if there is no relationship, 0 = otherwise). Both HIGHD and MEDIUMD are tested and according to theory, a positive association of postmerger performance with HIGHD and a negative association with MEDIUMD are predicted.

3.2.1.B: Market for Corporate Control:

Manne (1965) originally proposed this hypothesis and Jensen &

Ruback (1983) and Jarrell Brickley & Netter (1988) articulated it later. According to this theory, the corporate takeover market is one in which management teams compete to gain the right to manage the firm and competition among these management teams ensures that inefficient managers are replaced by more efficient managers, who would then act in the best interests of the shareholders. Since replacement of existing managers is crucial to this theory, this study hypothesizes that corporate takeovers through tender offers, which are sometimes hostile and result in replacement of target management, should show superior post-merger performance.

Hence, the type of acquisition is used as a variable (TYPEMER = 1 if tender offer; 0 otherwise) in the regression model in part 3.3 and the theory predicts a positive association between postmerger performance and TYPEMER.

3.2.1.C: Free Cash Flow Hypothesis:

Jensen (1988) hypothesizes that "Managers have incentives to expand their firms beyond the size that maximizes shareholders' wealth", which they do by investing in projects with negative Net Present Value. This problem is more severe in those firms which have large amounts of "free cash flows" (cash flows in excess of available investment opportunities with positive net present values). According to Jensen, mature industries, like oil & gas and tobacco, which have

limited growth opportunities and large cash inflows are more prone to this problem of misuse of free cash flows by management. He also argues that increased use of debt (which is normally associated with takeovers) bonds the managers by restricting their freedom to use future cash flows.

If debt serves the purpose of bonding managers, then firms with higher debt ratios should outperform those with lower debt ratios and hence, when the management of the target firm passes to a new group of managers who operate in an environment of higher debt, the performance should improve and vice versa. In other words, if a firm with low debt ratios is acquired by a firm with higher debt ratios, then the combined firm's postmerger performance should improve and vice versa.

The regression model in section 3.3 uses the variable DIFDEBTR (acquiring firm's debt ratio minus target firm's debt ratio) to test this argument and expects a positive association with postmerger performance.

3.2.1.D: Managerial Self-interest Hypothesis:

Jensen & Meckling (1976), in their seminal article on Agency Theory, highlight the conflict of interest between the shareholders and the managers because of the managers' desire to shirk and at the same time, receive more remuneration. Roll (1988) states that "the

management self-interest explanation of takeovers is based on the strong positive empirical relation between firm size and management compensation" and he cites Penrose (1959) and Williamson (1964) in support. Amihud & Lev (1981) find evidence for managers' propensity to diversify the firm to reduce the variability of their compensation, even when such actions do not increase shareholder value.

When managers own shares of the firm, they would bear a part of the total cost of their own non-value maximizing action. This would vary in direct proportion to the percentage of common stock they hold (Lewellen, Loderer & Rosenfeld, 1985). Thus, Manager ownership of common shares should correspondingly reduce agency conflicts and the post-merger performance should be positively associated with Managers' ownership percentage.

Another means of reducing the agency conflict is by devising a suitable managerial compensation plan. Tehranian Travlos & Waegelein (1987) find that bidding firms which compensate their executives with long-term performance plans experience a significantly more favorable market reaction than firms that do not have such long-term performance plans. Rappaport (1978) advocates the use of long-term performance plans as a possible solution to the horizon problem of managers' attempt to show short-term results at the expense of long-term health of the firm, which is one of the major agency problems. Travlos & Waegelein (1992) also find a positive association of abnormal returns

to bidding firms at takeover announcements to the existence of long-term performance plans.

Hence, this study uses two explanatory variables to test the Managerial Self-Interest Hypothesis: (1) ALPH, the ratio of common shares owned by all officers and directors of the bidding firm to the total common shares outstanding, as at one year before the merger year and (2) a dummy variable for the existence of long-term performance plans for top management. The regression model of section 3.3 uses ALPH and a dummy variable COMPPLAN (1 if long-term performance plan exists; 0 otherwise) to proxy for these two respectively and according to the theory expects a positive association with postmerger performance.

3.2.1.E: MARKET INEFFICIENCY/UNDERVALUED FIRM HYPOTHESIS:

This hypothesis, more commonly found in the popular press, contends that the stock market is not always efficient and sometimes, there are undervalued target firms. Magenheim & Mueller (1988) find that acquiring firms, on average, earn positive abnormal returns during the three years preceding acquisitions. Hence, it is more likely that there is a pricing mismatch (i.e. acquiring firms being overvalued and/or targets being undervalued) between the acquiring firm and the target firm. The present study uses the ratio of market value of assets to their book value (assets being defined as market value of

common stock plus book value of debt and preferred shares less cash and marketable securities) as the proxy for relative pricing of firms.

It is also likely that the difference in market to book ratios could very well be due to differences in the quality of management and/or growth prospects of the firms. It is conceivable that if a well-managed firm with high growth prospects and with a high market to book ratio acquires a poorly managed firm with low market to book ratio, the combined firm performance could improve by the acquiring firm turning around the target firm (and vice versa).

Hence, this study hypothesizes positive association of post-merger performance with the market to book differential (bidder - target) and uses DIFMKTBK as an explanatory variable in the regression model of section 3.3.

3.2.2: Empirical Market Studies (Short-term):

Datta, Pinches & Narayanan (1992) conclude in their meta-analysis of 41 event-studies that the factors which affect the abnormal returns on the announcement period, include, existence of multiple bidders, method of financing (stock versus cash), relationship of the businesses (conglomerate versus related) and the time period (since takeover premiums increased over time). Travlos (1987) finds evidence in support of the signalling effect (Myers & Majluf, 1984) of the method

of payment, with cash payments signaling improvement in stock prices and stock payments suggesting imminent decline. Jarrell & Poulsen (1989) find that the cumulative abnormal returns during the announcement period are affected by regulatory environment (particularly, the Williams Act of 1968), relative size, contested or not (single or multiple bidders) and time period. Morck, Shliefer & Vishny (1990) find evidence for the relation between the announcement period abnormal returns and three factors: relatedness of the firms, growth rate of the target and performance of bidder management. Chatterjee (1992) finds that restructuring (and the subsequent asset sale) is the predominant source of value creation instead of "synergy" as is normally defined and that restructuring leads to improved efficiency. Travlos & Waegelein (1992) find a positive association of abnormal returns to bidding firms at takeover announcements to existence of long-term performance plans, managerial stockholdings, method of payment by cash and time period, with pre-1980 merger announcements experiencing higher positive abnormal returns.

These short-term oriented event-studies show that the market's expectation of improved future performance is influenced by a number of factors, which include, the relative size, relatedness, time-trend, degree of bidder competition, growth rate of target/target management quality, bidder management quality/performance of bidder and restructuring. Restructuring could affect the performance in two ways: (1) directly by earning a gain (or incurring a loss) on sale of divisions

and (2) indirectly by eliminating less efficient divisions and redeploying the resources into their most efficient uses. This study does not consider the direct impact of gain/(loss) on sale of divisions (which are normally treated as extraordinary items) on performance. However, this study examines the indirect effect of restructuring and uses the ratio of post-merger asset sale to total assets, as a proxy for restructuring.

This study examines the association of long-term post-merger performance with relative size of the target (TARLSIZE), signaling effect of method of payment (PAYMENT), Time period of merger (TIMED) and the indirect effect of restructuring/asset sale (ASTSLRC), as well as with relatedness and relative pricing/quality of management. In addition, this study examines the association of post-merger performance with the standardized cumulative Abnormal Returns (SCAR) during the 2-days surrounding announcement of a merger.

3.2.3: Empirical studies using accounting data (long-term):

Kusewitt, Jr. (1985) finds an association between long-term financial performance of the acquiring firm and six factors: relative size, acquisition rate, industry commonality, timing, type of consideration (cash or stock) and targets' profitability. However, this study uses pre-1976 data and has methodological problems since it did not control for the noises created by the merger (choice of accounting

method, asset step-up, etc.) as well as for the macroeconomic factors affecting the industry.

Ravenscraft & Scherer (1989) find evidence that relative size and relatedness are associated with post-merger performance of the target lines of businesses. Healy Palepu & Ruback (1992) find that mergers between firms whose business activities overlap outperform others.

By and large, empirical studies using non-market data, have not examined the determinants of long-term performance of merged firms in great detail. The present study attempts to remedy this deficiency.

3.2.4: Summary of the explanatory variables:

The following is a summary of the earlier section, which shows the source of the theory, rationale and the variables to be tested with the predicted signs in parenthesis :

Source of the theory	Reason	Variable	
1. Synergy Hypothesis	Related mergers create more synergy	HIGH Dummy MEDIUM "	(+) (-)
2. Market for Corp. Control	Replacement of inefficient managers	TYPEMER dummy	(+)
3. Free Cash Flow	Reduction of misuse	Difference in	

Hypothesis	free cash flows	debt-ratios DIFDEBTR (+)
4. Managerial Self-Interest Hypo.	Agency Problems are reduced by stock ownership by managers	Manager ownership fraction (ALPH) (+)
5. "	Agency problems are lessened by long-term performance plans	Existence of l.t. performance plans (COMPPLAN) (+)
6. Market-Inefficiency Hypothesis	Undervalued firms (Indirect effects) & Management Quality	Difference in market to book ratio DIFMKTBK (+)
7. Empirical Studies (Short-term)	Signalling effects	PAYMENT Dummy(-)
8. "	Relative Size of the target	TARLSIZE (?)
9. "	Restructuring (Indirect effects)	Asset sale to total assets (ASTSLRC) (+)
10. "	Timing of announcement of merger	Dummy for pre-1980s (YEARD)(-)
11. "	CAR during merger announcement	2-day CAR (SCAR) (+)

3.3: DATA, METHODOLOGY & MODEL:

3.3.1: DATA:

The data analyzed in this study consist of a sample of public announcements of proposals to acquire a target firm by tender offer and by means of merger. The sample includes completed transactions for the

period 1972-86 and was obtained by searching the Federal Trade Commission's (FTC) Statistical Report on Mergers and Acquisitions (July 1981) and the Wall Street Journal. The former source, containing acquisitions completed in the period 1948-79, was used to identify acquiring firms announcing acquisitions in the period 1972-8. This generated 282 potential sample firms listed on the New York Stock Exchange (NYSE) or on the American Stock Exchange (AMEX) at least twelve months prior to the acquisition's completion date. Sixty-three firms, engaged in more than one acquisition within a 12-month period, were deleted from the FTC sample, reducing it to 219 firms. Another 87 firms were deleted because they were not referenced in the Wall Street Journal Index. The Wall Street Journal was the source of sample firms for the years 1979-86 and generated 223 potential sample firms listed on the NYSE or the AMEX. Thirty-two of these firms were deleted because they had more than one acquisition announcement within one year.

The announcement date of the proposed bid is the initial date of the first public announcement of the offer in the Wall Street Journal. To determine event dates accurately and to insulate the bid announcements from announcements of other major corporate events around the same period, the corporate history contained in the Wall Street Journal Index, Moody's Industrials and F&S Index was reviewed for all firms included in the tentative sample, for the 6-month period prior to the event date. Fifty-seven firms with concurrent major corporate events

(i.e. other takeover activities, divestitures, common stock repurchases, exchange offers, new offerings of securities, and new contracts) for the period of -5 to +5 days relative to the announcement date (t=0) were not included in the final sample. Finally, bidding firms selected for this study should have daily common stock returns in the Daily Returns File of the Center for Research in Security Prices (CRSP). The final sample contains 266 acquiring firms.

Financial data for the computation of Operating Cash Flow, debt ratio, market to book ratio, ratio of asset sales to total assets, industry relatedness, gain/(loss) on sale of assets, relative size of target and year of merger was obtained from the COMPUSTAT tapes. Information on stockholdings and compensation plans of officers and directors was obtained from the corporations' proxy statements of the year prior to the takeover announcement. Data was collected on the total number of common shares outstanding and on the number of common shares held by all officers and directors of the company. Information on method of payment was obtained from the Journal, Mergers & Acquisitions and the Wall Street Journal Index.

3.3.2: METHODOLOGY:

3.3.2.1: Cash Flow Measure of Operating Performance:

This study uses operating cash flow as the measure of performance to test the hypothesis. Operating Cash Flow is defined as "Sales

Revenue minus (Cost of Goods Sold and Selling, General & Administration Expenses)". The (cost of goods sold and selling general & administration expenses) do not include depreciation. The cash flow as defined above is before deducting interest expense, taxes and extraordinary losses and before adding extraordinary gains, interest income and non-operating income. This definition of operating cash flow does not include gains/(losses) from divestitures and large-scale sale of assets, which are normally treated as extra-ordinary gains/(losses) and focusses strictly on operating performance for which, by and large, the management is responsible for. This cash flow measure has the following advantages over the traditional accounting measures such as, ROE and ROA as well as over the cumulative abnormal returns of the market model:

1. It has theoretical support from finance theory (Fisher's theory of value, Dividend Discount Model, Capital Budgeting theory, etc.) which considers cash flow as the source of value.

2. It is free from distortions caused by accounting and accrual policy choices and more particularly, the choice of consolidation method (purchase v/s pooling of interest), choice of depreciation methods (straight-line, etc.), choice of depreciation /amortization period, asset revaluation (stepping-up the book-values), discretionary accrual choices, write-offs, etc.

3. Since, cash-flow is the most non-discretionary component of reported net income, according to research in accounting, it is associated with market value (Ball & Brown, 1968; Beaver Clark & Wright, 1979; Beaver Lambert & Morse 1980).

3.3.2.2: Choice of Deflators:

The above value (Operating Cash Flows) is deflated by the market value of assets computed as the market value of common shares plus the book value of debt and preferred shares minus cash and marketable securities. The change in the equity values of both the acquiring and target firms from five days before the merger announcement to the effective date of merger is computed on similar lines as Healy et al (1992)[2], who claim that this represents "the capitalized value of any expected postmerger performance improvements" and they argue that "if merger announcement equity revaluations are included in the asset base, measured cash flow returns will not show any abnormal increase, even though the merger results in an increase in operating cash flows ". However, in this study we analyze the data both with and without excluding this equity revaluations from the asset base.

The above market value of the total assets represents the

[2]. In this study, however, previous takeover offers from other suitors were not considered as in Healy et. al. (1992) though.

opportunity cost of the firm and hence a suitable measure of the value of the firm.

3.3.2.3: Computation of the test-statistics :

The computation of the dependent variable (DIFABROA) for testing the regression model of section 3.3.3 is described, in detail, in the following paragraphs of this section:

1. For each acquiring firm and for each target firm, financial data was extracted from the COMPUSTAT industrial and research tapes, for the period commencing five years before the merger (t = -5) to five years after the merger (t = 5). The merger year (t = 0) is excluded from the analysis. The operating cash flow for each year was computed using the following formula described earlier :

CF(i,t) = Sales Revenue minus (Cost of Sales + Selling General & Administration Expenses excluding depreciation). (1)

where CF= Operating Cash Flow before interest, taxes and expenses not involving cash outlay.

i = Each firm in the sample.

t = Each year relative to merger from t = -5 to t = +5 years, except the merger year t=0.

2. In order to control for the differences in size, purchase and sale of assets, divestitures, etc., the above CF(i,t) from (1), is

deflated by the Market Value of Assets, which is computed as follows:

> MKTVALU(i,t) = Market value of common shares plus book value of debt and preferred shares less cash and marketable securities, both with and without adjustment for changes in equity revaluation. (2)

3. For each financial year during the pre-merger period , the above two values for each acquiring firm and its target firm/s are added up, giving a pro-forma figure, as if the firms were combined from the very beginning. As for the post-acquisition period, the target firms' financial statements are consolidated with those of the bidding firm. This study analyzes data for -5 to -1 years prior to the merger and +1 to +5 years after the merger. In the case of bidding firms with more than one acquisition, the premerger period and postmerger period are counted with respect to the very first and the very last mergers respectively. In such cases, there would be a gap of more than one year between the end of the premerger period and the beginning of the postmerger period.

4. The following ratio of Operating Cash Flow Return on Market Value of Assets for each combined firm is computed for each year from -5 to -1 years and from +1 to +5 years:

$$CFROAMV(i,t) = CF(i,t) / MKTVALU(i,t) \quad (3)$$

where CFROAMV = Cashflow return on market value of assets.

5. In order to control for macroeconomic factors affecting the industry as a whole, the same ratio as in (3) for each SIC industry category is computed, after excluding all firms included in the sample as well as firms which were involved in a major acquisition during the period 1972-86 as per the Roster for the 100 largest mergers published in the Mergers & Acquisition Journal. Also eliminated were firms that were listed as the most active acquiring firms in terms of the number of acquisitions in the same Journal, which included firms acquiring a large number of small firms. The variables, CF(ind,t), MKTVALU(ind,t) and CFROAMV(ind,t) described in (1), (2) and (3) above were computed for each firm in each industry category and the median $CFROAMV_{(ind,t)}$ for each year for each industry is selected for purposes of controlling for macroeconomic changes. Separate computations were made using both (1) the 2-digit SIC industry classification and (2) the 4-digit SIC classification. For example, the variable CFROAMV(ind,t) was computed as follows:

$$CFROAMV(ind,t) = CF(ind,t) \,/\, MKTVALU(ind,t) \qquad (4)$$

where CFROAMV = Cash Flow Return on Market Value of Assets in terms of cash flow (Same as for firm).

ind = Each 4-digit or 2-digit SIC industry category or firm in such category.

6. The Abnormal Operating Cash Flow Return on Market Value of Assets is computed by subtracting (4) from (3). However, industry categories which do not contain at least 4 firms are deleted from the sample in

order to ensure that this statistic is representative of the industry.

$$ABROACF(i,t) = CFROAMV(i,t) - CFROAMV(ind,t) \quad (5)$$

where ABROACF = Abnormal (industry-adjusted) Cash Flow Return on Market Value of Assets.

7. The ABROACF (Abnormal Cash Flow Return on Market Value of Assets) for each year between -1 to -5 years and +1 to +5 years is computed and the median values during the premerger period (ABPREROA) and the postmerger period (ABPOSROA) for each combined firm are used as test-statistics. In order to ensure that these values are not outliers, combined firms which do not have a minimum of three years' ABROACF variable during both the pre- and postmerger periods, are deleted from the final sample.

8. The degree of success or failure of the merger is determined on the basis of whether the median postmerger ABPOSROA is an improvement over the corresponding premerger ABPREROA. The dependent variable, DIFABROA, is the Difference in the Abnormal Return on Assets, computed as ABPOSROA minus ABPREROA.

3.3.3: MODEL:

The following regression model is tested to find out the association between changes in post-merger performance and the explanatory variables in 3.2.4:

$$DIFABROA = a + b_1\,PAYMENT + b_2\,COMPPLAN + b_3\,TYPEMER + b_4\,SCAR + b_5\,ALPH + b_6\,DIFDEBTR + b_7\,DIFMKTBK + b_8\,ASTSLRC + b_9\,HIGHD + b_{10}\,MEDIUMD + b_{11}\,YEARD + b_{12}\,TARLSIZE + e$$

where DIFABROA= ABPOSROA minus ABPREROA

ABPOSROA= Abnormal industry-adjusted median postmerger cashflow return on assets.

ABPREROA= Abnormal industry-adjusted median premerger cashflow return on assets.

PAYMENT = Type of payment to targets' shareholders (0 = if cash; 1 = if stock)

COMPPLAN= Type of managerial compensation plan (0 =if short-term or mixed; 1 =if long term performance plan)

TYPEMER = Type of acquisition (0 = if merger ; 1 = if tender offer)

SCAR = Standardized cumulative abnormal returns on 2 days (day - 1 and day 0) surrounding the merger announcement.

ALPH = Percentage of ownership by managers

DIFDEBTR= Difference in the debt ratios of the acquiring firm minus target firm.

DIFMKTBK= Difference in the market to book ratios of the acquiring firm minus target firm.

ASTSLRC = Ratio of Asset Sales to Total Assets during postmerger period of combined firm.

HIGHD = High degree of overlap between the businesses of the acquiring firm and the target firm (Dummy).

MEDIUMD = Dummy Variable for Medium degree of relatedness.

YEARD = Dummy Variable for year of acquisition (0 = if before 1980; 1 = if after 1979)

TARLSIZE = Relative Size of the target firm

e = error term.

Since some of the explanatory variables relate to the merger transaction itself (such as, TYPEMER, PAYMENT and SCAR), each case of acquisition is treated as a separate observation. However, sample firms with only a single acquisition are tested separately from the full sample with both single and multiple acquisitions and the results are shown separately.

3.4: RESULTS:

The model described in section 3.3.3 was tested as follows:

1. The complete model was tested and the results are shown in Table V for sample firms with only a single acquisition as per the sample data and in Table VI for the full sample with both single and multiple acquisitions. Since the regression analysis excludes observations with any missing value, the number of observations used in the analysis is much smaller compared to the number of firms for which the DIFABROA variable is available. Hence, the results of many of these regressions in Tables V and VI have F-values which are not significant. Because of this, the regression model of section 3.3.3 was subdivided into two parts and tested separately.

2. Table I shows the first subset of the regression and its results, for firms with single acquisitions only and Table II shows the same for firms with both single and multiple acquisitions. The data-loss is minimal in this case. Table III shows the second subset of the regression model and its results for firms with single acquisitions only and Table IV shows the same for firms with single and multiple acquisitions. Tables V and VI show the results of the combined regression for the combined firms with single acquisitions only and for the complete sample, respectively.

The results shown in each Table are discussed below:

TABLE I HERE

The results of the regression in Table I show that the variables SCAR (See Panel A) and PAYMENT (See Panel B) are significant at less than the 0.15 level, with signs opposite to those predicted in section 3.2.4. However, the values for F-statistics and R^2 are very low and are not significant. Hence, it is difficult to draw any conclusion based on these results.

TABLE II HERE

Results of Table II show that the variable SCAR is significant at less than the 0.10 level (See Panels A, B and C) but with a negative sign, which is contrary to what was predicted in section 3.2.4. However, the regressions have low F-statistics and low adjusted R^2. Hence, the results are difficult to interpret.

TABLE III HERE

Table III shows the results of the second subset of the regressions tested. Panel A shows that the variable DIFDEBTR is significant at less than the 0.10 level with a negative sign and the regression model has an F-value which is significant. This indicates that if a bidding firm acquires a target firm with a higher debt ratio, it has a greater chance of success. Panel A also shows that the variable ASTSLRC is significant at less than the 0.10 level with a negative sign, indicating that postmerger performance is not positively related to sale of assets. Results in Panel C show that the variable HIGHD is significant at less than the 0.10 level, but with signs contrary to theory. This is somewhat puzzling and could be sample specific.

TABLE IV HERE

The results of Table IV, Panel A shows that the variable DIFMKTBK is significant at less than the 0.01 level with a positive sign for the

co-efficient. This suggests that if a well-managed firm (as proxied by a high market-to-book ratio) takes over another firm with a lower market-to-book ratio, then it is more likely to succeed and hence, it is likely that there is a flow of managerial talent from the acquiring firm to the target. This is as expected from the theory. This Panel also has a significant and negative ASTSLRC, which supports the findings of Table III (Panel A). This also indicates that the sale of assets is not positively associated with postmerger performance improvement. Panels B and C of Table IV also show similar results.

TABLE V HERE

Table V shows the combined regression model and its results for combined firms with single acquisitions only. Panel A shows that the variable DIFDEBTR is significant at less than the 0.05 level and has a negative sign for its co-efficient, which supports the results of Panel A of Table III. Similarly, the variable ASTSLRC is significant at less than the 0.10 level with a negative sign, which also supports earlier findings. The results also support the view that pre-1980s mergers are more successful, since the variable YEARD (See Panel B) is significant at less than the 0.15 level with a negative sign. The negative sign for the variable SCAR, which is significant at less than the 0.05 level in Panel A and at less than the 0.10 level in Panel B, is somewhat puzzling. It is possible that the market over-reacted at

the time of the announcement of the merger. It is also possible that the management of the combined firm took appropriate steps to allay the fears expressed by the shareholders during the announcement period.

TABLE VI HERE

The results of Table VI for SCAR, DIFMKTBK, ASTSLRC AND YEARD support the previous findings in terms of the signs of the co-efficients and their significance level. In addition, Panel A shows that the variable ALPH is significant at less than the 0.15 level with negative sign. This gives some support for the management self-interest (or entrenchment) hypothesis, since the managers' ownership ratio is inversely related to postmerger performance.

Tables VII to XVIII show correlations among the variables used in the above analysis.

3.5: DISCUSSION:

The results described in Section 3.4 show that the variable DIFMKTBK is significant with a positive sign for the co-efficient and the variables ASTSLRC, DIFDEBTR, YEARD, SCAR and ALPH are significant with negative signs.

The positive sign for DIFMKTBK is as predicted in section 3.2.4. This indicates that there is likely to be a flow of managerial talent from the acquiring firm to the target firm and if a firm with a higher management quality (as proxied by a higher market-to-book ratio) acquires a firm with lower management quality, then the post-merger performance of the combined firm is likely to be an improvement over its premerger performance. The same results could also support the possibility that there are undervalued firms available for takeover. The negative sign for the co-efficient of the variable ASTSLRC indicates that postmerger results are not positively associated with the magnitude of asset sales during the postmerger period. Hence, the fear that acquisitions and mergers are a means of showing short-term improvement in profitability, is not supported by this study.

The negative sign for the coefficient of the variable DIFDEBTR is contrary to the predicted sign in section 3.2.4. When an acquiring firm takes over a target firm which is more leveraged than itself, it is possible that it does so for more appropriate reasons than when it acquires a cash-rich target. However, this possible explanation needs further examination.

The negative sign of the coefficient for YEARD is as predicted in section 3.2.4. This shows that the mergers of the pre-1980 period outperform those of the post-1979 period. This could be because during the 1970s, better takeover opportunities were available and

competition in the market for corporate control during the 1980s, reduced the number of such takeover opportunities.

3.6: CONCLUSION:

The current study examined the association between the relative postmerger performance of the combined firm resulting from a merger and a number of variables. The study found that there is a positive association between the relative postmerger performance and the difference in market-to-book ratio of the firms involved in the merger and negative association between such performance and asset sale ratio, period of merger, difference in debt ratios, standardized cumulative abnormal returns during the announcement period and management ownership ratio.

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TABLE I
RESULTS OF REGRESSION: SAMPLE FIRMS WITH SINGLE ACQUISITION ONLY

Model Tested:

$$DIFABROA = a + b_1\ PAYMENT + b_2\ COMPPLAN + b_3\ TYPEMER + b_4\ SCAR + b_5\ ALPH + b_6\ YEARD + e$$

where DIFABROA= ABPOSROA - ABPREROA

ABPOSROA= Abnormal industry-adjusted median postmerger cashflow return on assets.

ABPREROA= Abnormal industry-adjusted median premerger cashflow return on assets.

PAYMENT = Type of payment to targets' shareholders (0 = if cash or mixed; 1 = if stock)

COMPPLAN= Type of managerial compensation plan (0 =if short-term or mixed; 1 =if long term performance plan)

TYPEMER = Type of acquisition (0 = if merger ; 1 = if tender offer)

SCAR = Standardized cumulative abnormal returns on 2 days (day - 1 and day 0) surrounding the merger announcement

ALPH = Percentage of ownership by managers

YEARD = Dummy variable for year of acquisition (0 = if before 1980; 1 = if after 1979)

e = error term

(t-values are shown in parenthesis)

TABLE I (Contd...)

Panel A: Sample of Combined Firms using 2-digit SIC Classification.

DIFABROA = 0.032 - 0.014 PAYMENT - 0.011 COMPPLAN
(1.910)[3] (0.958) (0.723)

- 0.011 TYPEMER - 0.004 SCAR - 0.002 ALPH - 0.002 YEARD
(0.764) (1.581)[4] (0.936) (0.116)

F-statistic: 0.682 (0.664) R^2: 0.053 N: 79
Adj-R^2-0.025

Panel B: Sample of Combined Firms using 4-digit SIC Classification.

DIFABROA= 0.043 - 0.031 PAYMENT - 0.013 COMPPLAN
(2.027)[2] (1.573)[4] (0.641)

- 0.012 TYPEMER - 0.004 SCAR - 0.004 ALPH - 0.018 YEARD
(0.627) (1.376) (1.311) (1.033)

F-statistic: 1.029 (0.415) R^2: 0.088 N: 70
Adj-R^2 0.003

Panel C: Sample of Combined Firms using 4-digit SIC Classification after deducting Equity Revaluations (Healy et al methodology).

DIFABROA= 0.029 - 0.025 PAYMENT - 0.009 COMPPLAN
(0.952) (1.066) (0.370)

- 0.019 TYPEMER - 0.004 SCAR - 0.003 ALPH + 0.001 YEARD
(0.878) (1.206) (0.737) (0.065)

F-statistic: 0.521 (0.789) R^2: 0.065 N: 51
Adj-R^2:-0.060

1 = Significant at < 0.01 level.
2 = Significant at < 0.05 level, except when used for squared.
3 = Significant at < 0.10 level.
4 = Significant at < 0.15 level.
N = Number of observations in the sample tested.

TABLE II
RESULTS OF REGRESSION: SAMPLE FIRMS WITH BOTH SINGLE AND MULTIPLE ACQUISITIONS

Model Tested:

$$DIFABROA = a + b_1\ PAYMENT + b_2\ COMPPLAN + b_3\ TYPEMER + b_4\ SCAR + b_5\ ALPH + b_6\ YEARD + e$$

where DIFABROA= ABPOSROA - ABPREROA

ABPOSROA= Abnormal industry-adjusted median postmerger cashflow return on assets.

ABPREROA= Abnormal industry-adjusted median premerger cashflow return on assets.

PAYMENT = Type of payment to targets' shareholders (0 = if cash or mixed; 1 = if stock)

COMPPLAN = Type of managerial compensation plan (0 =if short-term or mixed; 1 =if long term performance plan)

TYPEMER = Type of acquisition (0 = if merger ; 1 = if tender offer)

SCAR = Standardized cumulative abnormal returns on 2 days (day - 1 and day 0) surrounding the merger announcement

ALPH = Percentage of ownership by managers

YEARD = Dummy variable for year of acquisition (0 = if before 1980; 1 = if after 1979)

e = error term

(t-values are shown in parenthesis)

TABLE II (Contd...)

Panel A: Sample of Combined Firms using 2-digit SIC Classification.

DIFABROA = 0.030 - 0.003 PAYMENT + 0.001 COMPPLAN
(2.346)[2] (0.243) (0.051)

- 0.007 TYPEMER - 0.004 SCAR - 0.002 ALPH - 0.008 YEARD
(0.635) (1.868)[3] (0.866) (0.733)

F-statistic: 0.977 (0.445) R^2: 0.050 N: 118
Adj-R^2-0.001

Panel B: Sample of Combined Firms using 4-digit SIC Classification.

DIFABROA= 0.030 - 0.019 PAYMENT + 0.011 COMPPLAN
(1.809)[3] (1.189) (0.725)

- 0.007 TYPEMER - 0.005 SCAR - 0.001 ALPH - 0.025 YEARD
(0.411) (1.890)[3] (0.450) (1.814)[3]

F-statistic: 1.502 (0.185) R^2: 0.083 N: 105
Adj-R^2: 0.028

Panel C: Sample of Combined Firms using 4-digit SIC Classification after deducting Equity Revaluations (Healy et al methodology).

DIFABROA= 0.026 - 0.014 PAYMENT + 0.012 COMPPLAN
(1.249) (0.777) (0.725)

- 0.012 TYPEMER - 0.005 SCAR - 0.000 ALPH - 0.017 YEARD
(0.642) (1.799)[3] (0.018) (1.122)

F-statistic: 1.155 (0.340) R^2: 0.084 N: 82
Adj-R^2:-0.011

1 = Significant at < 0.01 level.
2 = Significant at < 0.05 level, except when used for squared.
3 = Significant at < 0.10 level.
4 = Significant at < 0.15 level.
N = Number of observations in the sample tested.

TABLE III
RESULTS OF REGRESSION: SAMPLE FIRMS WITH SINGLE ACQUISITION ONLY

Model Tested:

$$DIFABROA = a + b_1\ DIFDEBTR + b_2\ DIFMKTBK + b_3\ ASTSLRC + b_4\ HIGHD + b_5\ MEDIUMD + b6\ TARLSIZE + e$$

where DIFABROA= ABPOSROA - ABPREROA

ABPOSROA= Abnormal industry-adjusted median postmerger cashflow return on assets.

ABPREROA= Abnormal industry-adjusted median premerger cashflow return on assets.

DIFDEBTR= Difference in the debt ratios of acquiring firm minus target firm.

DIFMKTBK= Difference in the market to book ratios of acquiring firm minus target firm.

ASTSLRC = Ratio of Asset Sales to Total Assets during postmerger period of combined firm.

HIGHD = High degree of overlap between the businesses of acquiring firm and target firm (Dummy).

MEDIUMD = Dummy Variable for Medium degree of relatedness.

TARLSIZE= Relative Size of the target firm

e = error term.

(t-values are shown in parenthesis.)

TABLE III (Contd...)

Panel A: Sample of Combined Firms using 2-digit SIC Classification.

DIFABROA= 0.038 - 0.089 DIFDEBTR + 0.011 DIFMKTBK - 1.125
(2.069)2 (1.609)[3] (0.568) (2.113)[2]

ASTSLRC - 0.023 HIGHD + 0.021 MEDIUMD - 0.005 TARLSIZE
(1.349) (0.934) (0.089)

F-statistic: 2.715 (0.027) R^2: 0.295 N: 45
Adj-R^2: 0.186

Panel B: Sample of Combined Firms using 4-digit SIC Classification.

DIFABROA= 0.024 - 0.057 DIFDEBTR + 0.004 DIFMKTBK - 0.732
(0.877) (0.725) (0.127) (0.949)

ASTSLRC - 0.016 HIGHD + 0.043 MEDIUMD - 0.064 TARLSIZE
(0.605) (1.307) (0.774)

F-statistic: 1.489 (0.211) R^2: 0.208 N: 40
Adj-R^2: 0.068

Panel C: Sample of Combined Firms using 4-digit SIC Classification after deducting Equity Revaluations (Healy et al methodology).

DIFABROA= 0.032 - 0.028 DIFDEBTR + 0.021 DIFMKTBK - 1.036
(1.189) (0.351) (0.727) (1.211)

ASTSLRC - 0.063 HIGHD + 0.029 MEDIUMD + 0.021 TARLSIZE
(2.208)[2] (0.847) (0.259)

F-statistics: 2.105 (0.094) R^2: 0.365 N: 28
Adj-R^2: 0.192

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1 = Significant at < 0.01 level.
2 = Significant at < 0.05 level, except when used for squared.
3 = Significant at < 0.10 level.
4 = Significant at < 0.15 level.
N = Number of observations in the sample tested.

TABLE IV
RESULTS OF REGRESSION: SAMPLE FIRMS WITH SINGLE AND MULTIPLE ACQUISITIONS

Model Tested:

$$DIFABROA = a + b_1\ DIFDEBTR + b_2\ DIFMKTBK + b_3\ ASTSLRC + b_4\ HIGHD + b_5\ MEDIUMD + b6\ TARLSIZE + e$$

where DIFABROA= ABPOSROA - ABPREROA

ABPOSROA= Abnormal industry-adjusted median postmerger cashflow return on assets.

ABPREROA= Abnormal industry-adjusted median premerger cashflow return on assets.

DIFDEBTR= Difference in the debt ratios of acquiring firm minus target firm.

DIFMKTBK= Difference in the market to book ratios of acquiring firm minus target firm.

ASTSLRC= Ratio of Asset Sales to Total Assets during postmerger period of combined firm.

HIGHD = High degree of overlap between the businesses of acquiring firm and target firm (Dummy).

MEDIUMD= Dummy Variable for Medium degree of relatedness.

TARLSIZE = Relative Size of the target firm

e = error term.

(t-values are shown in parenthesis.)

TABLE IV (Contd...)

Panel A: Sample of Combined Firms using 2-digit SIC Classification.

DIFABROA= 0.029 - 0.048 DIFDEBTR + 0.023 DIFMKTBK - 1.197
(2.731)[1] (1.255) (2.667)[1] (3.223)[1]

ASTSLRC - 0.008 HIGHD + 0.013 MEDIUMD + 0.002 TARLSIZE
(0.674) (0.933) (0.064)

F-statistic: 4.379 (0.001) R^2: 0.282 N: 73
Adj-R^2: 0.217

Panel B: Sample of Combined Firms using 4-digit SIC Classification.

DIFABROA= 0.040 - 0.059 DIFDEBTR + 0.041 DIFMKTBK - 1.066
(2.670)[1] (1.081) (3.352)[1] (2.028)[2]

ASTSLRC - 0.010 HIGHD + 0.009 MEDIUMD - 0.093 TARLSIZE
(0.555) (0.479) (1.792)[3]

F-statistic: 4.126 (0.002) R^2: 0.292 N: 66
Adj-R^2: 0.221

Panel C: Sample of Combined Firms using 4-digit SIC Classification after deducting Equity Revaluations (Healy et al methodology).

DIFABROA= 0.034 - 0.018 DIFDEBTR + 0.049 DIFMKTBK - 0.888
(2.272)[2] (0.321) (4.143)[1] (1.334)

ASTSLRC - 0.037 HIGHD - 0.005 MEDIUMD - 0.026 TARLSIZE
(1.975)[3] (0.245) (0.494)

F-statistic: 5.223 (0.000) R^2: 0.416 N: 50
Adj-R^2: 0.336

1 = Significant at < 0.01 level.
2 = Significant at < 0.05 level, except when used for squared.
3 = Significant at < 0.10 level.
4 = Significant at < 0.15 level.
N = Number of observations in the sample tested.

TABLE V
RESULTS OF REGRESSION: SAMPLE FIRMS WITH SINGLE ACQUISITION ONLY

Model Tested:

$$DIFABROA = a + b_1\ PAYMENT + b_2\ COMPPLAN + b_3\ TYPEMER + b_4\ SCAR + b_5\ ALPH + b_6\ DIFDEBTR + b_7\ DIFMKTBK + b_8\ ASTSLRC + b_9\ HIGHD + b_{10}\ MEDIUMD + b_{11}\ YEARD + b_{12}\ TARLSIZE + e$$

where DIFABROA= ABPOSROA - ABPREROA

ABPOSROA= Abnormal industry-adjusted median postmerger cashflow return on assets.

ABPREROA= Abnormal industry-adjusted median premerger cashflow return on assets.

PAYMENT = Type of payment to targets' shareholders (0 = if cash ; 1 = if stock)

COMPPLAN= Type of managerial compensation plan (0 =if short-term or mixed; 1 =if long term performance plan)

TYPEMER = Type of acquisition (0 = if merger ; 1 = if tender offer)

SCAR = Standardized cumulative abnormal returns on 2 days (days -1 and 0) surrounding the merger announcement

ALPH = Percentage of ownership by managers

DIFDEBTR= Difference in the debt ratios of acquiring firm minus target firm.

DIFMKTBK= Difference in the market to book ratios of acquiring firm minus target firm.

ASTSLRC = Ratio of Asset Sales to Total Assets during postmerger period of combined firm.

HIGHD = High degree of overlap between the businesses of acquiring firm and target firm (Dummy).

MEDIUMD = Dummy Variable for Medium degree of relatedness.

YEARD = Dummy Variable for year of acquisition (0 = if before 1980; 1 = if after 1979)

TARLSIZE= Relative Size of the target firm

e = error term.

(t-values are shown in parenthesis.)

Panel A: Sample of Combined Firms using 2-digit SIC Classification.

$$\begin{aligned} \text{DIFABROA} = {} & 0.049 - 0.015\ \text{PAYMENT} + 0.002\ \text{COMPPLAN} - 0.009 \\ & (1.867)^{3}\ (0.679)\ (0.110)\ (0.462) \\ & \text{TYPEMER} - 0.007^{2}\ \text{SCAR} - 0.003\ \text{ALPH} - 0.098 \\ & (2.069)\ (0.876)\ (1.771)3 \\ & \text{DIFDEBTR} - 0.002\ \text{DIFMKTBK} - 1.013\ \text{ASTSLRC} \\ & (0.920)\ (1.839)^{3} \\ & - 0.019\ \text{HIGHD} + 0.020\ \text{MEDIUMD} - 0.031\ \text{YEARD} \\ & (1.082)\ (0.825)\ (1.646)^{4} \\ & + 0.082\ \text{TARLSIZE} \\ & (1.197) \end{aligned}$$

F-statistic: 1.898 (0.072) R^2: 0.408 N: 45

Adj-R^2: 0.193

Panel B: Sample of Combined Firms using 4-digit SIC Classification.

DIFABROA= 0.040 - 0.027 PAYMENT + 0.010 COMPPLAN + 0.000
(1.019) (0.789) (0.319) (0.005)

TYPEMER - 0.009 SCAR - 0.005 ALPH - 0.071
(1.790)[3] (1.154) (0.866)

DIFDEBTR - 0.016 DIFMKTBK - 0.558 ASTSLRC
(0.502) (0.688)

- 0.007 HIGHD + 0.045 MEDIUMD - 0.049 YEARD
(0.255) (1.246) (1.752)[3]

+ 0.069 TARLSIZE
(0.670)

F-statistic: 1.205 (0.327) R^2: 0.341 N: 40
Adj-R^2: 0.058

Panel C: Sample of Combined Firms using 4-digit SIC Classification after deducting Equity Revaluations (Healy et al methodology).

DIFABROA= 0.064 - 0.037 PAYMENT - 0.015 COMPPLAN - 0.009
(1.201) (0.686) (0.408) (0.217)

TYPEMER - 0.006 SCAR - 0.006 ALPH - 0.027
(0.995) (1.142) (0.273)

DIFDEBTR + 0.003 DIFMKTBK - 0.825 ASTSLRC
(0.063) (0.802)

- 0.054 HIGHD + 0.026 MEDIUMD - 0.023 YEARD
(1.452) (0.602) (0.535)

+ 0.103 TARLSIZE
(0.837)

F-statistic: 0.999 (0.490) R^2: 0.428 N: 28
Adj-R^2:-0.0004

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1 = Significant at < 0.01 level.
2 = Significant at < 0.05 level, except when used for squared.
3 = Significant at < 0.10 level.
4 = Significant at < 0.15 level.
N = Number of observations in the sample tested.

TABLE VI
RESULTS OF REGRESSION: SAMPLE FIRMS WITH BOTH
SINGLE AND MULTIPLE ACQUISITIONS

Model Tested:

$$DIFABROA = a + b_1\ PAYMENT + b_2\ COMPPLAN + b_3\ TYPEMER + b_4\ SCAR + b_5\ ALPH + b_6\ DIFDEBTR + b_7\ DIFMKTBK + b_8\ ASTSLRC + b_9\ HIGHD + b_{10}\ MEDIUMD + b_{11}\ YEARD + b_{12}\ TARLSIZE + e$$

where DIFABROA= ABPOSROA - ABPREROA

ABPOSROA= Abnormal industry-adjusted median postmerger cashflow return on assets.

ABPREROA= Abnormal industry-adjusted median premerger cashflow return on assets.

PAYMENT = Type of payment to targets' shareholders (0 = if cash ; 1 = if stock)

COMPPLAN= Type of managerial compensation plan (0 =if short-term or mixed; 1 =if long term performance plan)

TYPEMER = Type of acquisition (0 = if merger ; 1 = if tender offer)

SCAR = Standardized cumulative abnormal returns on 2 days (days -1 and 0) surrounding the merger announcement

ALPH = Percentage of ownership by managers

DIFDEBTR= Difference in the debt ratios of acquiring firm minus target firm.

DIFMKTBK= Difference in the market to book ratios of acquiring firm minus target firm.

ASTSLRC = Ratio of Asset Sales to Total Assets during postmerger period of combined firm.

HIGHD = High degree of overlap between the businesses of acquiring firm and target firm (Dummy).

MEDIUMD= Dummy Variable for Medium degree of relatedness.

YEARD = Dummy Variable for year of acquisition (0 = if before 1980; 1 = if after 1979)

TARLSIZE= Relative Size of the target firm

e = error term.
(t-values are shown in parenthesis.)

Panel A: Sample of Combined Firms using 2-digit SIC Classification.

DIFABROA= 0.052 - 0.019 PAYMENT - 0.014 COMPPLAN - 0.006
(3.225)[1] (1.322) (0.992) (0.457)

TYPEMER - 0.005 SCAR - 0.003 ALPH - 0.083
(2.438)2 (1.626)[4] (2.029)[2]

DIFDEBTR + 0.022 DIFMKTBK - 1.021 ASTSLRG
(2.352)[2] (2.691)[1]

- 0.003 HIGHD + 0.010 MEDIUMD - 0.019 YEARD
(0.237) (0.711) (1.599)[4]

+ 0.029 TARLSIZE
(0.735)

F-statistic: 3.098 (0.002) R^2: 0.379 N: 73
Adj-R^2: 0.257

TABLE VI (Contd...)

Panel B: Sample of Combined Firms using 4-digit SIC Classification.

DIFABROA= 0.054 - 0.031 PAYMENT + 0.012 COMPPLAN + 0.001
(2.394)[2] (1.431) (0.565) (0.074)

TYPEMER - 0.007 SCAR - 0.003 ALPH - 0.107
(2.379)2 (0.935) (1.830)[3]

DIFDEBTR + 0.034 DIFMKTBK - 0.865 ASTSLRC
(2.627)[2] (1.616)[4]

- 0.002 HIGHD + 0.017 MEDIUMD - 0.034 YEARD
(0.084) (0.862) (1.940)[3]

- 0.034 TARLSIZE
(0.618)

F-statistic: 2.970 (0.003) R^2: 0.398 Adj-R^2: 0.264 N: 66

Panel C: Sample of Combined Firms using 4-digit SIC Classification after deducting Equity Revaluations (Healy et al methodology).

DIFABROA= 0.053 - 0.041 PAYMENT + 0.007 COMPPLAN - 0.021
(2.028)[2] (1.545)[4] (0.351) (0.966)

TYPEMER - 0.005 SCAR - 0.004 ALPH - 0.045
(1.837)[3] (1.203) (0.701)

DIFDEBTR + 0.050 DIFMKTBK - 0.885 ASTSLRC
(3.600)[1] (1.290)

- 0.038 HIGHD + 0.002 MEDIUMD - 0.002 YEARD
(1.870)[3] (0.082) (0.100)

+ 0.046 TARLSIZE
(0.738)

F-statistic: 3.161 (0.003) R^2: 0.500 Adj-R^2: 0.342 N: 50

1 = Significant at < 0.01 level.
2 = Significant at < 0.05 level, except when used for squared.
3 = Significant at < 0.10 level.
4 = Significant at < 0.15 level.
N = Number of observations in the sample tested.

TABLE VII
PEARSON CORRELATION ANALYSIS - REGRESSION MODEL NO.1

COMBINED FIRMS WITH SINGLE ACQUISITIONS ONLY USING
2-DIGIT SIC INDUSTRY CLASSIFICATION

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
1. DIFABROA	1.000 (0.00)						
2. PAYMENT	-0.010 (0.93)	1.000 (0.00)					
3. COMPPLAN	-0.037 (0.75)	-0.249[2] (0.03)	1.000 (0.00)				
4. TYPEMER	-0.090 (0.43)	-0.333[1] (0.00)	-0.043 (0.70)	1.000 (0.00)			
5. SCAR	-0.166[4] (0.14)	-0.303[1] (0.01)	0.071 (0.53)	0.181[4] (0.11)	1.000 (0.00)		
6. ALPH	-0.065 (0.57)	-0.042 (0.71)	-0.274[1] (0.01)	-0.003 (0.98)	-0.087 (0.44)	1.000 (0.00)	
7. YEARD	-0.031 (0.79)	0.069 (0.54)	-0.003 (0.98)	0.261[2] (0.02)	-0.066 (0.56)	-0.045 (0.70)	1.000 (0.00)

1 = Significant at < 0.01 level.
2 = Significant at < 0.05 level.
3 = Significant at < 0.10 level.
4 = Significant at < 0.15 level.

Full descriptions of the variables used in the above table:

DIFABROA= ABPOSROA - ABPREROA

ABPOSROA= Abnormal industry-adjusted median postmerger cashflow return on assets.

ABPREROA= Abnormal industry-adjusted median premerger cashflow return on assets.

PAYMENT = Type of payment to targets' shareholders (0 = if cash or mixed; 1 = if stock)

COMPPLAN= Type of managerial compensation plan (0 = if short-term or mixed; 1 = if long term performance plan)

TYPEMER = Type of acquisition (0 = if merger ; 1 = if tender offer)

SCAR = Standardized cumulative abnormal returns on 2 days (day -1 and day 0) of announcement

ALPH = Percentage of ownership by managers

YEARD = Dummy variable for year of acquisition (0 = if before 1980; 1 = if after 1979)

TABLE VIII
PEARSON CORRELATION ANALYSIS - REGRESSION MODEL NO.1
COMBINED FIRMS WITH SINGLE AND MULTIPLE ACQUISITIONS USING
2-DIGIT SIC INDUSTRY CLASSIFICATION

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
1. DIFABROA	1.000 (0.00)						
2. PAYMENT	0.057 (0.55)	1.000 (0.00)					
3. COMPPLAN	0.027 (0.77)	-0.185[2] (0.04)	1.000 (0.00)				
4. TYPEMER	-0.113 (0.22)	-0.394[1] (0.00)	-0.163[3] (0.08)	1.000 (0.00)			
5. SCAR	-0.176[3] (0.06)	-0.288[1] (0.00)	0.066 (0.47)	0.159[3] (0.08)	1.000 (0.00)		
6. ALPH	-0.071 (0.44)	-0.064 (0.49)	-0.201[2] (0.03)	0.087 (0.35)	-0.076 (0.41)	1.000 (0.00)	
7. YEARD	-0.079 (0.39)	0.005 (0.95)	-0.016 (0.87)	0.251[1] (0.01)	-0.028 (0.76)	-0.043 (0.64)	1.000 (0.00)

1 = Significant at < 0.01 level.
2 = Significant at < 0.05 level.
3 = Significant at < 0.10 level.
4 = Significant at < 0.15 level.

Full descriptions of the variables used in the above table:

DIFABROA= ABPOSROA - ABPREROA
ABPOSROA= Abnormal industry-adjusted median postmerger cashflow return on assets.
ABPREROA= Abnormal industry-adjusted median premerger cashflow return on assets.
PAYMENT = Type of payment to targets' shareholders (0 = if cash or mixed; 1 = if stock)
COMPPLAN= Type of managerial compensation plan (0 = if short-term or mixed; 1 = if long term performance plan)
TYPEMER = Type of acquisition (0 = if merger ; 1 = if tender offer)
SCAR = Standardized cumulative abnormal returns on 2 days (day -1 and day 0) of announcement
ALPH = Percentage of ownership by managers
YEARD = Dummy variable for year of acquisition (0 = if before 1980; 1 = if after 1979)

TABLE IX
PEARSON CORRELATION ANALYSIS - REGRESSION MODEL NO.1
COMBINED FIRMS WITH SINGLE ACQUISITIONS ONLY USING
4-DIGIT SIC INDUSTRY CLASSIFICATION

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
1. DIFABROA	1.000 (0.00)						
2. PAYMENT	-0.122 (0.31)	1.000 (0.00)					
3. COMPPLAN	0.008 (0.95)	-0.241[2] (0.04)	1.000 (0.00)				
4. TYPEMER	-0.061 (0.62)	-0.354[1] (0.00)	-0.040 (0.74)	1.000 (0.00)			
5. SCAR	-0.096 (0.43)	-0.317[1] (0.01)	0.046 (0.70)	0.165 (0.17)	1.000 (0.00)		
6. ALPH	-0.122 (0.31)	0.000 (0.99)	-0.295[1] (0.01)	-0.007 (0.95)	-0.102 (0.40)	1.000 (0.00)	
7. YEARD	-0.150 (0.21)	0.054 (0.66)	0.041 (0.73)	0.232[2] (0.05)	-0.079 (0.52)	-0.003 (0.98)	1.000 (0.00)

1 = Significant at < 0.01 level.
2 = Significant at < 0.05 level.
3 = Significant at < 0.10 level.
4 = Significant at < 0.15 level.

Full descriptions of the variables used in the above table:

DIFABROA= ABPOSROA - ABPREROA
ABPOSROA= Abnormal industry-adjusted median postmerger cashflow return on assets.
ABPREROA= Abnormal industry-adjusted median premerger cashflow return on assets.
PAYMENT = Type of payment to targets' shareholders (0 = if cash or mixed; 1 = if stock)
COMPPLAN= Type of managerial compensation plan (0 = if short-term or mixed; 1 = if long term performance plan)
TYPEMER = Type of acquisition (0 = if merger ; 1 = if tender offer)
SCAR = Standardized cumulative abnormal returns on 2 days (day -1 and day 0) of announcement
ALPH = Percentage of ownership by managers
YEARD = Dummy variable for year of acquisition (0 = if before 1980; 1 = if after 1979)

TABLE X
PEARSON CORRELATION ANALYSIS - REGRESSION MODEL NO.1
COMBINED FIRMS WITH SINGLE & MULTIPLE ACQUISITIONS USING
4-DIGIT SIC INDUSTRY CLASSIFICATION

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
1. DIFABROA	1.000 (0.00)						
2. PAYMENT	-0.071 (0.47)	1.000 (0.00)					
3. COMPPLAN	0.105 (0.28)	-0.183[3] (0.06)	1.000 (0.00)				
4. TYPEMER	-0.076 (0.44)	-0.405[1] (0.00)	-0.161[3] (0.10)	1.000 (0.00)			
5. SCAR	-0.144[4] (0.14)	-0.296[1] (0.00)	0.045 (0.65)	0.138 (0.16)	1.000 (0.00)		
6. ALPH	-0.036 (0.71)	-0.050 (0.61)	-0.196[2] (0.04)	0.093 (0.34)	-0.085 (0.39)	1.000 (0.00)	
7. YEARD	0.046 (0.68)	-0.003 (0.97)	0.015 (0.88)	0.229[2] (0.02)	-0.036 (0.72)	-0.024 (0.81)	1.000 (0.00)

1 = Significant at < 0.01 level.
2 = Significant at < 0.05 level.
3 = Significant at < 0.10 level.
4 = Significant at < 0.15 level.
Full descriptions of the variables used in the above table:

DIFABROA= ABPOSROA - ABPREROA

ABPOSROA= Abnormal industry-adjusted median postmerger cashflow return on assets.
ABPREROA= Abnormal industry-adjusted median premerger cashflow return on assets.
PAYMENT = Type of payment to targets' shareholders (0 = if cash or mixed; 1 = if stock)
COMPPLAN= Type of managerial compensation plan (0 = if short-term or mixed; 1 = if long term performance plan)
TYPEMER = Type of acquisition (0 = if merger ; 1 = if tender offer)
SCAR = Standardized cumulative abnormal returns on 2 days (day -1 and day 0) of announcement
ALPH = Percentage of ownership by managers

YEARD = Dummy variable for year of acquisition (0 = if before 1980; 1 = if after 1979)

TABLE XI
PEARSON CORRELATION ANALYSIS - REGRESSION MODEL NO.1
COMBINED FIRMS WITH SINGLE ACQUISITIONS ONLY USING
THE METHOD ADOPTED BY HEALY, ET AL (1992)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
1. DIFABROA	1.000 (0.00)						
2. PAYMENT	-0.066 (0.64)	1.000 (0.00)					
3. COMPPLAN	0.024 (0.87)	-0.224[4] (0.11)	1.000 (0.00)				
4. TYPEMER	-0.101 (0.48)	-0.399[1] (0.00)	-0.070 (0.62)	1.000 (0.00)			
5. SCAR	-0.166 (0.24)	-0.233[3] (0.10)	0.050 (0.73)	0.206[4] (0.14)	1.000 (0.00)		
6. ALPH	-0.084 (0.56)	0.005 (0.97)	-0.383[1] (0.01)	-0.033 (0.82)	-0.045 (0.75)	1.000 (0.00)	
7. YEARD	-0.013 (0.93)	0.013 (0.36)	-0.123 (0.38)	0.177 (0.21)	-0.026 (0.86)	-0.121 (0.39)	1.000 (0.00)

1 = Significant at < 0.01 level.
2 = Significant at < 0.05 level.
3 = Significant at < 0.10 level.
4 = Significant at < 0.15 level.
Full descriptions of the variables used in the above table:

DIFABROA= ABPOSROA - ABPREROA

ABPOSROA= Abnormal industry-adjusted median postmerger cashflow return on assets.
ABPREROA= Abnormal industry-adjusted median premerger cashflow return on assets.
PAYMENT = Type of payment to targets' shareholders (0 = if cash or mixed; 1 = if stock)
COMPPLAN= Type of managerial compensation plan (0 = if short-term or mixed; 1 = if long term performance plan)
TYPEMER = Type of acquisition (0 = if merger ; 1 = if tender offer)
SCAR = Standardized cumulative abnormal returns on 2 days (day -1 and day 0) of announcement
ALPH = Percentage of ownership by managers

YEARD = Dummy variable for year of acquisition (0 = if before 1980; 1 = if after 1979)

TABLE XII
PEARSON CORRELATION ANALYSIS - REGRESSION MODEL NO.1
COMBINED FIRMS WITH SINGLE & MULTIPLE ACQUISITIONS USING
THE METHOD ADOPTED BY HEALY, ET AL (1992)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
1. DIFABROA	1.000 (0.00)						
2. PAYMENT	-0.034 (0.76)	1.000 (0.00)					
3. COMPPLAN	0.122 (0.27)	-0.166[4] (0.14)	1.000 (0.00)				
4. TYPEMER	-0.117 (0.29)	-0.441[1] (0.00)	-0.199[3] (0.07)	1.000 (0.00)			
5. SCAR	-0.191[3] (0.08)	-0.238[2] (0.04)	0.058 (0.60)	0.152 (0.17)	1.000 (0.00)		
6. ALPH	-0.006 (0.96)	-0.057 (0.61)	-0.252[2] (0.02)	0.101 (0.36)	-0.040 (0.72)	1.000 (0.00)	
7. YEARD	-0.160[4] (0.15)	0.013 (0.90)	-0.093 (0.40)	0.216[2] (0.05)	0.020 (0.86)	-0.098 (0.38)	1.000 (0.00)

1 = Significant at < 0.01 level.
2 = Significant at < 0.05 level.
3 = Significant at < 0.10 level.
4 = Significant at < 0.15 level.

Full descriptions of the variables used in the above table:

DIFABROA= ABPOSROA - ABPREROA

ABPOSROA= Abnormal industry-adjusted median postmerger cashflow return on assets.
ABPREROA= Abnormal industry-adjusted median premerger cashflow return on assets.

PAYMENT = Type of payment to targets' shareholders (0 = if cash or mixed; 1 = if stock)
COMPPLAN= Type of managerial compensation plan (0 = if short-term or mixed; 1 = if long term performance plan)
TYPEMER = Type of acquisition (0 = if merger ; 1 = if tender offer)
SCAR = Standardized cumulative abnormal returns on 2 days (day -1 and day 0) of announcement
ALPH = Percentage of ownership by managers

YEARD = Dummy variable for year of acquisition (0 = if before 1980; 1 = if after 1979)

TABLE XIII
PEARSON CORRELATION ANALYSIS - REGRESSION MODEL NO. 2

COMBINED FIRMS WITH SINGLE ACQUISITIONS ONLY USING
2-DIGIT SIC INDUSTRY CLASSIFICATION

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
1. DIFABROA	1.000 (0.00)						
2. DIFDEBTR	-0.300[2] (0.02)	1.000 (0.00)					
3. DIFMKTBK	-0.010 (0.94)	-0.076 (0.58)	1.000 (0.00)				
4. ASTSLRC	-0.264[2] (0.03)	0.117 (0.43)	0.475[1] (0.00)	1.000 (0.00)			
5. HIGHD	-0.169 (0.14)	0.048 (0.72)	-0.017 (0.90)	-0.084 (0.50)	1.000 (0.00)		
6. MEDIUMD	0.266[2] (0.02)	-0.210[4] (0.12)	0.066 (0.63)	-0.087 (0.49)	-0.475[1] (0.00)	1.000 (0.00)	
7. TARLSIZE	0.025 (0.83)	-0.457[1] (0.00)	0.284[2] (0.03)	0.205[3] (0.10)	0.090 (0.43)	-0.107 (0.35)	1.000 (0.00)

1 = Significant at < 0.01 level.
2 = Significant at < 0.05 level, except when used for squared.
3 = Significant at < 0.10 level.
4 = Significant at < 0.15 level.

Full description of the variables used in the above regression:

DIFABROA= ABPOSROA - ABPREROA

ABPOSROA= Abnormal industry-adjusted median postmerger cashflow return on assets.

ABPREROA= Abnormal industry-adjusted median premerger cashflow return on assets.

DIFDEBTR = Difference in the debt ratios of acquiring firm minus target firm.

DIFMKTBK = Difference in the market to book ratios of acquiring firm minus target firm.

ASTSLRC = Ratio of Asset Sales to Total Assets during postmerger period of combined firm.

HIGHD = High degree of overlap between the businesses of acquiring firm and target firm (Dummy).

MEDIUMD = Dummy Variable for Medium degree of relatedness.

TARLSIZE = Relative Size of the target firm

TABLE XIV
PEARSON CORRELATION ANALYSIS - REGRESSION MODEL NO. 2
COMBINED FIRMS WITH SINGLE & MULTIPLE ACQUISITIONS USING
2-DIGIT SIC INDUSTRY CLASSIFICATION

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
1. DIFABROA	1.000 (0.00)						
2. DIFDEBTR	-0.246[2] (0.02)	1.000 (0.00)					
3. DIFMKTBK	0.335[1] (0.01)	-0.178[3] (0.09)	1.000 (0.00)				
4. ASTSLRC	-0.264[1] (0.01)	0.130 (0.27)	0.165 (0.16)	1.000 (0.00)			
5. HIGHD	-0.053 (0.57)	0.061 (0.56)	-0.128 (0.22)	0.001 (0.99)	1.000 (0.00)		
6. MEDIUMD	0.123[2] (0.18)	-0.194[3] (0.06)	-0.032 (0.76)	-0.075 (0.47)	-0.417[1] (0.00)	1.000 (0.00)	
7. TARLSIZE	-0.038 (0.68)	-0.367[1] (0.00)	0.034 (0.75)	0.153[4] (0.14)	0.118 (0.20)	-0.043 (0.65)	1.000 (0.00)

1 = Significant at < 0.01 level.
2 = Significant at < 0.05 level, except when used for squared.
3 = Significant at < 0.10 level.
4 = *Significant at* < 0.15 level.

Full description of the variables used in the above regression:

DIFABROA= ABPOSROA - ABPREROA
ABPOSROA= Abnormal industry-adjusted median postmerger cashflow return on assets.
ABPREROA= Abnormal industry-adjusted median premerger cashflow return on assets.

DIFDEBTR = Difference in the debt ratios of acquiring firm minus target firm.

DIFMKTBK = Difference in the market to book ratios of acquiring firm minus target firm.

ASTSLRC = Ratio of Asset Sales to Total Assets during postmerger period of combined firm.
HIGHD = High degree of overlap between the businesses of acquiring firm and target firm (Dummy).
MEDIUMD = Dummy Variable for Medium degree of relatedness.
TARLSIZE = Relative Size of the target firm

TABLE XV
PEARSON CORRELATION ANALYSIS - REGRESSION MODEL NO. 2
COMBINED FIRMS WITH SINGLE ACQUISITIONS ONLY USING
4-DIGIT SIC INDUSTRY CLASSIFICATION

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
1. DIFABROA	1.000 (0.00)						
2. DIFDEBTR	-0.074 (0.60)	1.000 (0.00)					
3. DIFMKTBK	-0.034 (0.82)	-0.078 (0.59)	1.000 (0.00)				
4. ASTSLRC	-0.243[3] (0.06)	0.113 (0.48)	0.472[1] (0.00)	1.000 (0.00)			
5. HIGHD	-0.059 (0.62)	-0.017 (0.91)	-0.068 (0.64)	-0.091 (0.50)	1.000 (0.00)		
6. MEDIUMD	0.125 (0.30)	-0.190 (0.18)	0.092 (0.52)	-0.011 (0.40)	-0.476[1] (0.00)	1.000 (0.00)	
7. TARLSIZE	-0.193[3] (0.10)	-0.434[1] (0.00)	0.306[2] (0.03)	0.260[2] (0.05)	0.136 (0.26)	-0.115 (0.35)	1.000 (0.00)

1 = Significant at < 0.01 level.
2 = Significant at < 0.05 level, except when used for squared.
3 = Significant at < 0.10 level.
4 = Significant at < 0.15 level.
Full description of the variables used in the above regression:

DIFABROA= ABPOSROA - ABPREROA
ABPOSROA= Abnormal industry-adjusted median postmerger cashflow return on assets.
ABPREROA= Abnormal industry-adjusted median premerger cashflow return on assets.
DIFDEBTR = Difference in the debt ratios of acquiring firm minus target firm.
DIFMKTBK = Difference in the market to book ratios of acquiring firm minus target firm.
ASTSLRC = Ratio of Asset Sales to Total Assets during postmerger period of combined firm.
HIGHD = High degree of overlap between the businesses of acquiring firm and target firm (Dummy).
MEDIUMD = Dummy Variable for Medium degree of relatedness.
TARLSIZE = Relative Size of the target firm

TABLE XVI
PEARSON CORRELATION ANALYSIS - REGRESSION MODEL NO. 2
COMBINED FIRMS WITH SINGLE & MULTIPLE ACQUISITIONS USING
4-DIGIT SIC INDUSTRY CLASSIFICATION

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
1. DIFABROA	1.000 (0.00)						
2. DIFDEBTR	-0.106 (0.33)	1.000 (0.00)					
3. DIFMKTBK	0.373[1] (0.00)	-0.154 (0.16)	1.000 (0.00)				
4. ASTSLRC	-0.233[2] (0.03)	0.114 (0.35)	0.168 (0.17)	1.000 (0.00)			
5. HIGHD	-0.004 (0.97)	0.041 (0.71)	-0.145 (0.19)	-0.013 (0.91)	1.000 (0.00)		
6. MEDIUMD	-0.006 (0.95)	-0.176[4] (0.11)	-0.032 (0.77)	-0.075 (0.49)	-0.409[1] (0.00)	1.000 (0.00)	
7. TARLSIZE	-0.239[1] (0.01)	-0.359[1] (0.00)	0.043 (0.70)	0.207[3] (0.06)	0.171[3] (0.08)	-0.066 (0.51)	1.000 (0.00)

1 = Significant at < 0.01 level.
2 = Significant at < 0.05 level, except when used for squared.
3 = Significant at < 0.10 level.
4 = Significant at < 0.15 level.

Full description of the variables used in the above regression:

DIFABROA= ABPOSROA - ABPREROA
ABPOSROA= Abnormal industry-adjusted median postmerger cashflow return on assets.
ABPREROA= Abnormal industry-adjusted median premerger cashflow return on assets.
DIFDEBTR = Difference in the debt ratios of acquiring firm minus target firm.
DIFMKTBK = Difference in the market to book ratios of acquiring firm minus target firm.
ASTSLRC = Ratio of Asset Sales to Total Assets during postmerger period of combined firm.
HIGHD = High degree of overlap between the businesses of acquiring firm and target firm (Dummy).
MEDIUMD = Dummy Variable for Medium degree of relatedness
TARLSIZE = Relative Size of the target firm

TABLE XVII
PEARSON CORRELATION ANALYSIS - REGRESSION MODEL NO. 2:
COMBINED FIRMS WITH SINGLE ACQUISITIONS ONLY USING
THE METHOD ADOPTED BY HEALY, ET AL (1992)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
1. DIFABROA	1.000 (0.00)						
2. DIFDEBTR	-0.102 (0.53)	1.000 (0.00)					
3. DIFMKTBK	0.130 (0.43)	-0.093 (0.58)	1.000 (0.00)				
4. ASTSLRC	-0.198 (0.22)	0.004 (0.98)	0.248 (0.20)	1.000 (0.00)			
5. HIGHD	-0.223[4] (0.11)	-0.088 (0.59)	0.017 (0.92)	0.061 (0.71)	1.000 (0.00)		
6. MEDIUMD	0.166 (0.24)	-0.105 (0.52)	0.144 (0.38)	-0.015 (0.93)	-0.507[1] (0.00)	1.000 (0.00)	
7. TARLSIZE	-0.093 (0.51)	-0.462[1] (0.00)	0.196 (0.23)	0.136 (0.40)	0.272[2] (0.05)	-0.122 (0.39)	1.000 (0.00)

1 = Significant at < 0.01 level.
2 = Significant at < 0.05 level, except when used for squared.
3 = Significant at < 0.10 level.
4 = Significant at < 0.15 level.
Full description of the variables used in the above regression:

DIFABROA= ABPOSROA - ABPREROA
ABPOSROA= Abnormal industry-adjusted median postmerger cashflow return on assets.
ABPREROA= Abnormal industry-adjusted median premerger cashflow return on assets.
DIFDEBTR = Difference in the debt ratios of acquiring firm minus target firm.
DIFMKTBK = Difference in the market to book ratios of acquiring firm minus target firm.
ASTSLRC = Ratio of Asset Sales to Total Assets during postmerger period of combined firm.
HIGHD = High degree of overlap between the businesses of acquiring firm and target firm (Dummy).
MEDIUMD = Dummy Variable for Medium degree of relatedness.
TARLSIZE = Relative Size of the target firm

TABLE XVIII
PEARSON CORRELATION ANALYSIS - REGRESSION MODEL NO. 2
COMBINED FIRMS WITH SINGLE & MULTIPLE ACQUISITIONS USING
THE METHOD ADOPTED BY HEALY, ET AL (1992)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
1. DIFABROA	1.000 (0.00)						
2. DIFDEBTR	-0.106 (0.39)	1.000 (0.00)					
3. DIFMKTBK	0.515[1] (0.00)	-0.137 (0.27)	1.000 (0.00)				
4. ASTSLRC	-0.194[4] (0.13)	0.027 (0.85)	0.028 (0.85)	1.000 (0.00)			
5. HIGHD	-0.100 (0.37)	0.006 (0.96)	-0.132 (0.28)	0.156 (0.23)	1.000 (0.00)		
6. MEDIUMD	-0.046 (0.68)	-0.114 (0.35)	-0.022 (0.86)	-0.001 (0.99)	-0.415[1] (0.00)	1.000 (0.00)	
7. TARLSIZE	-0.203[3] (0.07)	-0.387[1] (0.00)	-0.082 (0.51)	0.135 (0.30)	0.246[2] (0.03)	-0.029 (0.80)	1.000 (0.00)

1 = Significant at < 0.01 level.
2 = Significant at < 0.05 level, except when used for squared.
3 = Significant at < 0.10 level.
4 = Significant at < 0.15 level.

Full description of the variables used in the above regression:

DIFABROA= ABPOSROA - ABPREROA
ABPOSROA= Abnormal industry-adjusted median postmerger cashflow return on assets.
ABPREROA= Abnormal industry-adjusted median premerger cashflow return on assets.
DIFDEBTR = Difference in the debt ratios of acquiring firm minus target firm.
DIFMKTBK = Difference in the market to book ratios of acquiring firm minus target firm.
ASTSLRC = Ratio of Asset Sales to Total Assets during postmerger period of combined firm.
HIGHD = High degree of overlap between the businesses of acquiring firm and target firm (Dummy).
MEDIUMD = Dummy Variable for Medium degree of relatedness.
TARLSIZE = Relative Size of the target firm

CHAPTER 4: CONCLUSIONS

This dissertation examined the impact of mergers on the long-term operating performance of the combined firm and also investigated the determinants of the post-merger operating performance.

Chapter 1 described the nature of the dissertation topic, the motivations for selecting this topic and the organization of the dissertation.

Chapter 2 examined the impact of mergers on long-term operating performance of the combined firm. This chapter, using the methodology adopted by Healy et al (1992), examined the operating performance during the five post-merger years in relation to the corresponding five premerger years. This study used cash-flow measures of return on assets and regression analysis as in Healy, et al (1992). Asset values were calculated as the sum of the market value of equity shares plus the book value of debt and preferred shares as in Healy et al (1992). The study controlled for industry-related factors by finding out the abnormal industry-adjusted return on assets in three different ways: (1) by using the 2-digit SIC classification, (2) by using the 4-digit SIC classification and (3) by replicating the equity revaluation adjustments of Healy et al (1992). This study found support for the

results of Healy et al (1992). It also found that the use of the appropriate measure of industry-adjustment is crucial to the level of significance of the results, even though the post-merger performance for the sample firms was superior in all cases. It found that the use of the 2-digit SIC classification for industry-adjustment and the equity revaluation of Healy et al (1992) result in a more significant improvement in post-merger performance, whereas the use of the 4-digit SIC classification results in a less significant, but positive improvement in post-merger performance.

Chapter 2 of this study extended the work done by Healy et al (1992) in a number of different ways, in addition to the use of different methods for industry-adjustments. It used t-tests for the difference in medians between the post- and premerger performance. This generally supported the findings of the regression analysis. This study also used the non-parametric Wilcoxon Signed-Rank test to evaluate the post-merger performance, which also supported the findings of the other tests.

In addition, Chapter 2 also did some sensitivity analysis to find the degree of reliability of the earlier conclusions. After eliminating three outliers which were driving the results of the reduced subsample, it found that postmerger operating performance is an improvement over the corresponding premerger performance.

Chapter 3 of this dissertation examined the association of

postmerger performance with factors derived from both theoretical and empirical studies. These factors include the type of payment to target shareholders (cash or stock), type of managerial compensation plan used by the acquiring firm (long-term performance plan or short-term bonus plan), type of acquisition (merger or tender offer), standardized cumulative abnormal returns during the announcement of the merger, percentage of ownership by managers, difference in the debt ratios of the acquiring firm and the target firm, difference in the market to book ratios of the acquiring firm and the target firm, ratio of asset sales to total assets during the postmerger period of the combined firm, degree of overlap between the businesses, period of acquisition and relative size of the target firm.

The association between postmerger performance and the above factors was tested using two regression models, both of which had six non-overlapping independent variables. The dependent variable was the difference between the median postmerger and premerger return on assets.

The study found that the difference in market to book ratio of the acquiring firm minus the target firm is positively associated with postmerger performance. This suggests that there is a possible flow of managerial talent from the acquiring firm to the target firm.

The study also found that the postmerger ratio of asset sales to

total assets is negatively associated with postmerger performance. This might indicate that sale of assets is not a source of improved postmerger performance.

The results of Chapter 3 also indicate that the differences in the debt ratios of the acquiring firm minus the target firm is negatively associated with postmerger performance. This may be because of a number of reasons. Firms with high debt and low cash reserves are probably being acquired for more sound reasons than cash-rich takeover targets or acquiring firms improve the financial health of the targets.

The regression analysis of Chapter 3 also found that the standardized cumulative abnormal returns during the announcement period is significant but with a negative sign. This is somewhat controversial. There are a number of possible explanations for this. Since this study covers a five year period after the merger, it is possible that the managers took steps to remedy any shareholder misgivings during the announcement period of the merger. It is also likely that the cumulative abnormal returns are based on expectations of a shorter time frame.

In general, this dissertation examined a number of issues relating to mergers and acquisitions in a comprehensive manner. However, this dissertation is only a gateway for even more detailed

studies. For instance, the methodologies and hypotheses developed in this dissertation can be extended to study a number of other issues relating to the impact of mergers on shareholders' wealth, tax liability, market power, etc. A study using a larger sample would be even more interesting. This methodology can also be used to examine the consequences of any major event of long-term impact: divestitures, restructuring, foreign acquisitions, proxy fights, etc.